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A Model of General Self-Concept for Students Receiving Services for a Learning Disability: Does Class Placement Play a Role?

by

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Abstract

The purpose of this research project was to investigate the effects of individual and environmental variables on the general self-concept of students with learning disabilities (LD) and students without disabilities (NLD). For students with LD, these variables included (a) class placement, (b) social skills, (c) social self-concept, (d) student-teacher relationship, (e) parent's academic expectations of their child, (f) academic self-concept, (g) general self-concept, (h) socioeconomic status (SES), and (i) gender. For students without disabilities, identical variables were used, with the exception of class placement. Models of the relationships between these variables were created based on existing research and theory. Data from the National Longitudinal Survey of Children and Youth (NLSCY) were analysed using Structural Equation Modeling (SEM). Results indicated that models for students in both the LD and NLD groups were an excellent fit to the data. As well, class placement had a moderate, indirect negative effect on general self-concept which was mediated by student-teacher relationships, social self-concept, and parent expectations. Differences between LD and NLD models were noted particularly in relation to effects of student-teacher relationships, social skills, gender and SES. Educational implications arising from the findings are discussed.

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Chapter One: Introduction

Background of the Problem

Improving students' self-concept has become a major goal of the modern education system. Although its importance in schools is generally usurped by academic achievement, longitudinal studies have shown that students with high self-concept have better peer and family relationships, higher grades, and lower levels of alcohol and drug use, depression, and anxiety (Deihl, Vicary, & Dieke, 1997; DuBois, Felner, Brand, & George, 1999; Zimmerman, Copeland, Shope, & Dielman, 1997). Student self-concept is particularly influential in relation to achievement, as it has been shown to significantly impact on students' willingness to expend effort and persistence on academic tasks (Guay, Larose, & Boivin, 2004; Hoge, Smit, & Crist, 1995; Keith, 2002; Marsh & Yeung, 1997).

A number of variables have been identified as having a significant effect on student self-concept. These include (a) social variables (interpersonal skills and student perceptions of peer acceptance); (b) teacher variables (student perception of teacher support, teacher attitude); (c) home variables (SES, student perceptions of parent support, parent expectations of student success); and (d) student variables (level of achievement, presence of disability, academic self-concept).

While influences on self-concept for students without disabilities have been examined for some time, recent research has focused on groups of students assumed to be at-risk for lowered self-concept. Students with learning disabilities (LD), for example, are the largest group of special needs students in North American schools. In the United States, the number of students identified as LD in 1998-1999 was 2.8 million (U.S.

Department of Education, 2000). Approximately 50 percent of students who receive special education services have been identified as having an LD. Although varying definitions of LD exist across school boards, the Learning Disabilities Association of Canada (LDAC, 2002) has created the following definition.

> "Learning Disabilities" refer to a number of disorders which may affect the acquisition, organization, retention, understanding or use of verbal or nonverbal information. These disorders affect learning in individuals who otherwise demonstrate at least average abilities essential for thinking and/or reasoning. As such, learning disabilities are distinct from global intellectual deficiency. Learning disabilities result from impairments in one or more processes related to perceiving, thinking, remembering or learning. These include, but are not limited to: language processing; phonological processing; visual spatial processing; processing speed; memory and attention; and executive functions (e.g., planning and decision-making). (p. 1)

For students with learning disabilities, the identification of variables that influence self-concept is of particular importance for two reasons. First, students with LD are suggested to be at-risk for lowered self-concept due to their difficulties in social and academic areas as well as the possible stigmatization of the labeling and placement process (Vaughn, Elbaum, & Boardman, 2001). Second, students with LD are characterized by low achievement, and self-concept has been found to have a significant effect on school grades. If factors significant to a positive self-concept of learning disabled students can be identified, efforts can be focused on these variables, and both affective and academic outcomes can be improved.

One likely factor contributing to the self-concept of students with LD is class/school placement. Individual school boards in Canada have chosen various settings in which to meet the needs of these students, ranging from segregated schools to full-time inclusion in the regular classroom. However, provincial Ministries of Education across Canada are united in their policy of educating all students in neighbourhood schools as a first placement option (e.g., Government of Alberta, 2003). Research has yet to determine the impact various types of class placements have on the achievement and self-concept of students with LD. It is essential that empirical research be conducted in order to establish the particular contribution of class placement to the affective and academic outcomes of students with learning disabilities.

While a growing body of research has explored influences such as teacher attitudes and peer relationships on student self-concept, there has yet to be an examination of these in a single study. As students do not experience these variables in isolation, a deeper understanding of the classroom conditions that contribute to positive self-concept can best be gained through simultaneous modeling. The method most appropriate to testing the influence of several variables in tandem is Structural Equation Modeling (SEM). Structural equation methods provide estimates of the strength of all the hypothesized relationships between variables in a theoretical model. The method yields information about hypothesized impact, both directly from one variable to another and indirectly, via other variables (Maruyama, 1998).

One of the major challenges facing researchers attempting to model variables related to self-concept, particularly for students with LD, is the lack of available data. Modeling requires large samples, and collecting information from students, their teachers and their families, on such a large scale, is extremely difficult in terms of both access and cost. In recognition of the challenges involved in obtaining this type of essential information about Canadian students, the federal government began funding the National Longitudinal Study of Child and Youth (NLSCY) in 1994. Data are collected for the study every two years with the most recent release being the fifth cycle. The NLSCY consists of interviews of parents, teachers, and students, and includes information pertaining to education, health, development, behaviour, friends, and activities. This dataset includes items related to all variables of interest in the current study and will, therefore, be the source of data to be analyzed.

Purpose of Study

The purpose of the present research, then, is to test a model of self-concept with Canadian elementary-aged children with learning disabilities (LD sample). Based on an extensive review of research, the following variables will be included in the model: (a) class placement, (b) social skills, (c) social self-concept, (d) student-teacher relationship, (e) parents academic expectations, (f) academic self-concept, (g) socioeconomic status, (h) gender, and (i) general self-concept. The model will also be tested with a group of students without disabilities (NLD sample) using identical variables with the exception of (a) class placement. Results of these analyses will provide information regarding the effect of each variable on self-concept as well as the overall fit of the model; in other words how well the hypothesized relationships between these variables match what is observed in the data.

The results of this study will provide insight into the effect of class placement on student self-concept. It will also help to determine if influences on self-concept for students without disabilities are similarly appropriate for students with LD and if the same variables impact on self-concept with the same strength. Identifying a model of self-concept can provide direction for interventions and school policy that will improve outcomes for students with LD.

Definition of Terms

For the purposes of this study, the following definitions were adopted.

1. Class placement: the setting where students with disabilities receive special education services.
2. Social skills: social and emotional skills and behaviours needed to succeed as a member of a classroom.
3. Social self-concept: students' perceptions of competence in peer relations.
4. Student-teacher relationship: students' perceptions of teacher support of learning.
5. Parent academic expectations: parent's expectation of the level of education to be attained by their child.
6. Academic self-concept: students' perceptions of their competence in academics.
7. Socioeconomic status: composite of parent's highest level of education, household income, and occupation classification.
8. Gender: female or male.
9. General self-concept: students' perceptions of themselves as effective, capable individuals who have self-confidence and self-respect and are proud and satisfied with the way they are (Marsh, Craven, & Debus, 1998).

Delimitations of the Study

Participation in this study was limited to students in elementary schools who participated in the NLSCY for Cycles 2 and 3. Self-report surveys for students in the NLSCY are not administered until the age of 10. Therefore, for inclusion in this study, students must be both in elementary school and also aged 10 or older. For the LD model, students must have been identified as receiving special services for LD by their teacher. For the NLD model, students must not be receiving any special education services. Finally, it should be noted that the purpose of the NLSCY was not to investigate the school experiences of students with LD and the group of students in this study may not be a nationally representative sample of students with LD. Thus caution should be exercised with regard to external validity or generalization of the results.

Chapter Two: Literature Review

The literature review will be presented in three areas. First, the prevalence of students with LD in Canadian schools will be discussed followed by a description of the various methods of identification and diagnosis of these students. Next, a review of conceptualizations and theoretical underpinnings of general self-concept will be presented. Finally, empirical studies investigating the influence and predictive ability of various school-related variables on the general self-concept of children with and without learning disabilities will be examined.

Students with Learning Disabilities

The term "learning disabilities" was first coined by Samuel Kirk in 1963 at a conference focused on children with perceptual handicaps (Kirk, 1963).

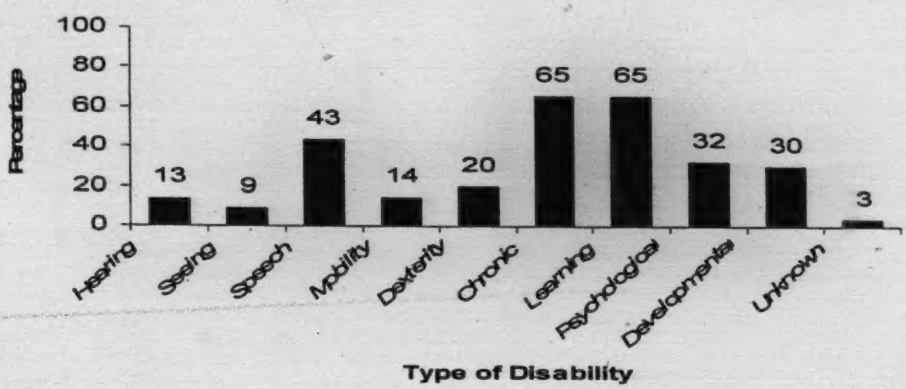
> Recently, I have used the term "learning disabilities" to describe a group of children who have disorders in development in language, speech, reading, and associated communication skills needed for social interaction. In this group, I do not include children who have sensory handicaps, such as blindness and deafness, because we have methods of managing and training the deaf and the blind. I also exclude from this group children who have generalized mental retardation. (Kirk, 1963, p. 3)

Identification and programming for Canadian students with LD was pioneered in the late 1950s by psychiatrist Edward Levinson. Levinson was puzzled by the low school performance of students of average intelligence only presenting with mild behavioural difficulties (Wiener & Siegel, 1992). As a result of the important work of Levinson, Kirk and other leaders, including the extraordinary work of the parent-directed Learning

Disabilities Association of Canada (LDAC), huge numbers of students have been identified with LD and interventions have been put in place to meet their needs.

Students with learning disabilities make up the largest special education category in Canada and the US. This is a result of the incredible growth in the number of students with this label. According to statistics collected by the U.S. Department of Education, the number of school-aged students with LD has more than tripled since 1976 (Hallahan, Lloyd, Kauffman, Weiss, & Martinez, 2005). As education is administered provincially in Canada, no federal figures are available. However, in 1988, the Canadian Council for Exceptional Children (CEC) conducted a survey of the provinces to determine the prevalence of LD. They reported that proportions of students with LD ranged from 1.3% in British Columbia to 10.2% in Québec (Wiener & Siegel, 1992). In 2001, the figures from the National Participation and Activity Limitation Survey (PALS; Ministry of Industry, 2002) indicate that LD is the second most common type of disability along with chronic conditions (see Figure 1). Finally, of the total population of children aged 5 to 14, PALS figures show that 2.6% had a learning disability.

Figure 1. Types of disability among Canadian children aged 5-14 with a disability.



While great strides have been made in the identification of students with LD, methods of defining and diagnosing LD vary both across and within provinces. Klassen (2002) surveyed a number of publications in Canadian education journals from 1989 through 2000. He examined particularly the definitions researchers used to identify students with LD in their samples. Equal numbers of studies defined LD as a significant discrepancy between IQ and achievement or as below-average achievement with an IQ score in at least the average range. Klassen also summarized the provincial definitions used to allocate funding for special services; these generally included average IQ with below average academic functioning.

An LD diagnosis is generally required by provincial ministries of education for funding purposes. Schools are allocated subsidies either on a per student basis, as is generally the case for severe disabilities, or in a lump sum based on the overall number of students with mild/moderate disabilities (Wong & Hutchinson, 2001). Identifying a child as having a learning impairment can also be helpful in developing appropriate programming to meet their needs. Many ministries require a psycho-educational assessment for a diagnosis to be made. Some, like that of British Columbia, allow teacher-directed evaluations. In a review of special education in British Columbia, co-chaired by Siegel and Ladyman (2000), the statement was made that, "significant effort is too frequently expended on this identification process rather than on supporting the needs of the students, and that this may be influenced by the present categorical funding system" (p. 27).

Debate concerning the "significant discrepancy" requirement for LD diagnosis is currently raging throughout North America. Criticisms include the inability of this method to differentiate students with LD from students who are low achievers, the lack of instructional guidance provided by the discrepancy and the fact that LD can often be identified without the use of IQ tests. There is also a lack of consensus as to the size of discrepancy that constitutes a LD (Donovan & Cross, 2002; Elliott & Fuchs, 1997; Francis et al., 2005; Gresham, 2002; Stuebing et al., 2002).

Few models have been proposed as viable replacements for the discrepancy method of identification. One which has seen recent attention is a response-to-instruction model of LD (Vaughn & Fuchs, 2003) which involves first assessing quality of classroom instruction by tracking the progress of all students, identifying students who are achieving far below their peers, and finally, determining whether the general education program can be adapted to improve the achievement of the students. If students still fail to make improvements, it is determined that the presence of a learning disability can be substantiated and special services provided.

Emerging definitions of LD highlight the importance of ecological factors for the achievement of students rather than the traditional view of intrinsic disability. This perspective can also be applied to the self-concept of students with LD. Rather than assuming that students with LD will experience low self-concept because of difficulties that they experience as a result of their disability, we need rather to explore and assess their surroundings to determine if adequate supports are in place. As is the case for students without LD, the general self-concept of students with LD is likely influenced by a number of factors both at school and home. By identifying these variables, determining the magnitude of their impact on general self-concept as well as relationships with other variables, interventions can be put in place to improve outcomes for students with LD.

There is no better way to examine the effects of various ecological factors on the self-concept of students with learning disabilities than in a comprehensive model. For students with LD, one of the most important factors to be included in a model of self-concept is class placement.

Inclusion and Class Placement

No other influence on academic and socio-emotional outcomes for students with LD has been as widely debated as class placement. Students with learning disabilities were first educated in institutions in Canada. With the advent of compulsory education laws, segregated classes were set up within regular schools in the early 1900s. By the 1960s, the civil rights movement and the associated normalization movement prompted a move towards integration and mainstreaming (Andrews & Lupart, 2000). Children who were moved back into the regular classroom at this point were generally those with mild disabilities, and critics of mainstreaming suggested that special and regular education continued to operate as parallel rather than integrated systems (Lupart, 1998; Lupart & Webber, 2002). Students with disabilities were still in "special education" but were brought into the regular class mainly for non-academic subjects and removed for any "real" education (Karagiannis, Stainback, & Stainback, 1996; Winzer, 1999).

The term "inclusion" emerged in the 1990s. This signified a philosophical shift from the view of education as parallel systems of regular and special education to a unified system of education where the goal for all students is to provide an appropriate education to maximize student potential. According to Lupart (2000), "authentic inclusion means full participation of all teachers and students in an open, unified learning community and shared responsibility for continuous growth and progress" (p. 222).

Proponents of inclusion list the social benefits of being with same-age peers, the "real-life" experiences of a regular classroom, and the negative effects of segregated classes on self-concept and self-esteem as arguments in favour.

Inclusion is often touted as a human rights issue and arguments are made that classrooms should reflect the equality that we are striving for in broader society – if we don't have inclusion, we must have exclusion (Karagiannis, Stainback, & Stainback, 1996; Lipsky & Gartner, 1989). Many advocates for students with disabilities, however, feel that the implementation of full inclusion and the dismantling of special education will be detrimental for these students and that providing a continuum of placement options is the best option (Fuchs & Fuchs, 1994).

In the United States, the passing of the Individuals with Disabilities Education Improvement Act 2004 (IDEA) mandated the inclusion of students with special needs in the least restrictive environment with an Individual Education Plan (IEP) for each child. In Canada, where educational matters are determined within each province, no similar federal law exists. However, the majority of provinces are united in their policies of including students with disabilities in their local neighbourhood as a first placement option with an Individual Education or Program Plan in place (e.g., Government of Alberta, 2003). More specifically, though, a consensus regarding the goals of inclusion, the ways in which inclusive education should be delivered, and the effect of inclusion on students with learning disabilities has yet to be reached. Research findings have yet to either affirm or disprove the claims made by either side of the inclusion debate.

As has been suggested above, the issue of defining a class placement as "inclusive" is a controversial one. Many researchers who have investigated the effects of inclusion on student outcomes have used the term to describe a wide variety of educational experiences. Most specify inclusion to mean the full-time placement of students with disabilities in a general or regular education class along with students who do not have disabilities (Daniel & King, 1997; Marston, 1996; Rea, McLaughlin, & Walther-Thomas, 2002; Tapasak & Walther-Thomas, 1999; Vaughn, Elbaum, & Schumm, 1996; Wiener & Tardif, 2004). Many models of inclusion also involve degrees of teacher collaboration, ranging from weekly consultation to daily co-teaching, by general and special education teachers (Banerji & Dailey, 1995; Marston, 1996; Rea et al., 2002; Tapasak & Walther-Thomas, 1999; Vaughn et al., 1996; Wiener & Tardif, 2004). However, the practices, philosophies and policies in place in these inclusive settings are not known. Thus, the differential effect of inclusion that is being tested in these studies is simplistically determined by class placement, as illustrated by Harrington (1997), "…Inclusion is an organizational rather than an educational intervention, where the emphasis has shifted from what and how to teach to an emphasis on where to teach" (p.65).

In an attempt to resolve this issue, in the present study the term "inclusion" will be restricted to those settings where there is sufficient description to determine that, at the very least, students are attending age and grade-appropriate general education classes full-time, where required services are provided within the class and program planning and delivery are the shared responsibility of general and special education staff. The term "general class placement" will be used when students are placed full-time in a regular education setting but nothing else is known about the setting, or when the placement is simply by default as a result of lack of available services or personnel (e.g., Beltempo, 1990). Other common placements include "pull-out", where students are placed in a general class for instruction in subjects considered not to be affected by their disability, and relocated to a resource room for instruction in specific subjects. Students with LD are also served in segregated classes or schools where they receive full-time instruction with other students who have similar disabilities.

Arguably the most highly debated policy change in education, inclusion has yet to be either supported or disputed by empirical studies. Baker, Wang, and Walberg (1994/1995) summarized three meta-analyses of the effects of general education placement on students with special needs. They concluded that the "effect sizes demonstrate a small-to-moderate beneficial effect of inclusive education on the academic and social outcomes of special-needs children" (p. 33). The majority of the research in this area focuses generally on the effect of inclusion and general education placement on either the academic achievement of students or socio-emotional outcomes such as general self-concept. The latter of these will be discussed in more detail in a subsequent section.

Class Placement and Academic Achievement

A number of studies have investigated the effect of inclusion and general class placement on academic achievement, with contradictory findings. Rea et al. (2002) compared the achievement of two groups of grade eight students at similar schools in the same district. One school served students with LD using a pull-out model ($n = 22$), and the other, using an inclusive model ($n = 36$). Comparisons of the two groups showed no differences in IQ scores, age, gender, ethnicity, SES, and years receiving special education services. However, students in the inclusive setting received higher course grades in language arts, mathematics, science, and social studies than students in the pull-out setting. Student performance on the state proficiency test did not differ depending on placement. Further analyses of students' Individual Education Plans (IEPs) revealed that those in the inclusive classes had goals and objectives focused on general education curricula to a significantly greater extent than those in the pull-out class which focused more on remediation. Rea and her colleagues concluded that their findings provided support for inclusive placements, because students performed as well or better in this setting.

Marston (1996) compared the reading gains of elementary students with learning disabilities in three different settings: general class placement only ($n = 33$), combined general class placement and pull-out ($n = 36$), and pull-out only ($n = 171$). Reading scores were obtained in the fall and again in the spring. An analysis of covariance (ANCOVA) was conducted with spring reading scores as the dependent variable and fall scores as the covariate. A statistically significant difference was found between the three groups and Tukey's test revealed that students in the combined services groups had greater gains that students in pull-out, $t(43) = 5.29, p < 0.01$, and general class placements, $t(43) = 5.64, p < 0.01$. Data collected from 68 teachers also indicated support for this model, because their satisfaction ratings were significantly higher for a combination of general class and pull out placements than for the other two models.

Daniel and King (1997) used discriminant function analyses to predict the group membership of elementary students with learning disabilities in either random general class placement ($n = 105$), clustered general class placement ($n = 34$), or pull-out placements ($n = 68$). Reading gain scores were one of the best predictors of group membership (structure coefficient = 0.37) for students in grade three. Students in the general placements experienced higher gains in reading achievement than their peers in pull-out placements. For students in grade four, mathematics gain scores were the best predictor (structure coefficient = 0.50). For this grade level, students in random general class placement and pull-out were compared and mathematics gain scores were higher for students in the latter than the former. Authors concluded that their results revealed no consistent pattern in reading and math achievement differences between students with LD in various class placements.

Conflicting results were found by Cole, Waldron, and Majd (2004), who studied the progress of approximately 300 elementary-aged students with learning disabilities in either general class or pull-out settings. In mathematics, 41.7% of students in general class settings and 34.0% of students in pull-out settings progressed at a rate equal or above that of their typically-achieving peers. In reading, students in the two settings performed more similarly, with percentages of 48.2 (general class) and 47.8 (pull-out) meeting or exceeding their peers' rate of progress. Significant differences in reading and mathematics scores were not found between students with LD in general class or pull-out placements. However, the authors concluded that the pattern described in terms of student progress was in favour of general class settings.

In summary, students with LD in general or inclusive classes appear to either benefit academically from their placement or to achieve comparably to students receiving services through a pull-out model. These findings provide unequivocal support for the placement of students with LD in general education classrooms and clearly refute claims that such settings will be detrimental to the academic success of students with LD. In regards to the impact of class placement on the general self-concept of students with LD, mixed results have also been found; these will be described in the following section.

General Self Concept

Self-concept is one facet of individual psychological development that has been extensively researched in student samples over the past half century (e.g., Harter, 1983; Marsh & Shavelson, 1985; Piers & Harris, 1964; Shavelson, Hubner, & Stanton, 1976; Wylie, 1961). For students, a positive sense of self-concept is seen firstly as an important educational outcome in its own right. Accordingly, one of the goals of the education system is to instil in students a sense of competence and self-worth. However, self-concept is often deemed important due to its role as an explanatory or mediator variable, as it relates to academic achievement. In light of such promising outcomes, educators have created numerous interventions with the goal of improving students' self-concept, particularly for students from low SES backgrounds (Chambers, Abrami, Massue, & Morrison, 1998; Trowbridge, 1970), and those with disabilities (Burton, 2004; Ezell & Klein-Ezell, 2003; see Elbaum & Vaughn [2001] for a review of programs for students with LD).

The late 1960s and early 1970s saw an explosion of research on self-concept, particularly as it applied to student differences within racially segregated and non-segregated settings (Busk, Ford, & Schulman, 1973; Hodgkins & Stakenas, 1969; Long & Henderson, 1968; Quimby, 1967) , open and traditional classes (Allen, 1974; Klaff,& Docherty, 1975; Ruedi & West, 1973), and students of varying ability levels (Weiner & Weiner, 1972; White & Howard, 1973). With the increase in research productivity came concerns regarding the lack of common conceptualizations and theoretical validity. A seminal article by Shavelson et al. (1976) described the issues confronting the field and put forth a model of self-concept. Shavelson later collaborated with Marsh, who created the Self Description Questionnaire (Marsh, 1988), one of the most well-validated and reliable instruments used to assess self-concept (Byrne, 1996). Other works, notably a series of monographs authored by Wylie (1974, 1989), analyzed current self-concept theory and research and served to greatly advance and refine the field.

One of the goals of early researchers, including Shavelson and Wylie, was to operationally define this construct. A general definition of self-concept is an individual's perception of themselves. However, this definition is of little value in theoretically based empirical research. In fact, Marsh (1997) stated that "self-concept, like so many other psychological constructs, suffers in that 'everyone knows what it is,' so that many researchers do not feel compelled to provide any theoretical definition of what they are measuring" (p. 29).

Byrne (1996) describes the two main categories of theoretical models of self-concept that have been the most prevalent: Unidimensional and Multidimensional (see Table 1). Theorists originally conceptualized self-concept has having more of a unitary, global character, much as intelligence once was conceptualized. In later years, however, the existence of separate domains or facets of self-concept began to be postulated, either in addition to or within general or global self-concept.

Shavelson et al. (1976) were among the first to move beyond a single-entity depiction of self-concept to present a multidimensional, hierarchical model (see Figure 2). In this model, general self-concept is akin to the "g" factor of intelligence, which is then divided into subsequently more specific elements. Furthermore, Shavelson's model stipulates that self concept has the following characteristics:

1. Multifaceted: According to Shavelson, individuals tend to categorize perceptions of themselves.
2. Stable: While general self-concept is very stable, the further down the hierarchy one moves, the more individual situations and experiences become salient, resulting in less stability.
3. Developmental: As individuals develop cognitively and emotionally, their self-concept becomes more multifaceted.
4. Descriptive: One dimension of self-concept is descriptive, as in "I am happy."
5. Evaluative: A second dimension of self-concept is evaluative, as in "I am doing well in my schoolwork."
6. Differentiable: Self-concept can be differentiated from other constructs

Shavelson's model represents a consensus among many psychologists and educators that self-concept is truly a multidimensional concept and that it should be discussed and investigated with reference to specific domains (Harter, 1985a; Soares, A. & Soares, L. 1979). This perspective may be particularly important for students with LD, as they may have lower self-concept in areas of difficulty such as academics and peer relationships, but have higher self-concept in areas unaffected by their LD, such as athletics, the arts, or physical appearance. Thus, for the present study, in accordance with the definitions outlined in the Introduction chapter, self-concept will be defined according to the Shavelson/Marsh model as having a general domain as well as more specific domains such as academic, social, and physical (Marsh & Shavelson, 1985). The specific domains are assumed to be correlated to varying degrees with each other, and all are assumed to be highly correlated with the general domain.

Table 1

Theoretical Models of Self-Concept (Byrne, 1996)

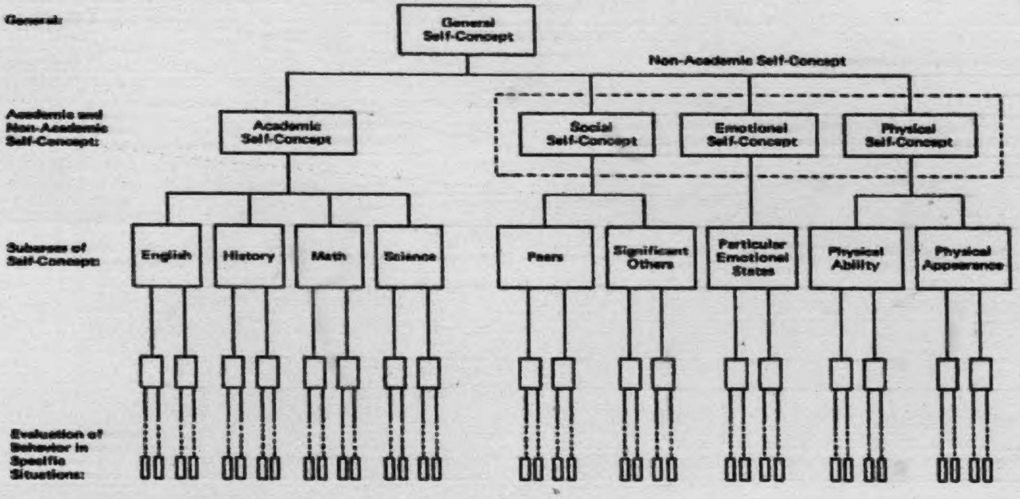
	Description	Scales
Unidimensional Models		
Nomothetic Model	Self-concept is a unitary construct made up of overlapping facets of information. It can be measured by summing across areas of self-concept such as academic, social, and physical to create a single score.	Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1964)
"True" Unidimensional Model	Self-concept is general and global and can be measured directly with a single score.	The Self-Esteem Scale (Rosenberg, 1967)
Multidimensional Models		
Independent-Factor Model	Self-concept is composed of multiple facets, each of which is independent of the others. There is no global self-concept.	Affective Perception Inventory (API; Soares, A. & Soares, L. 1979).
Correlated-Factor	Self-concept is composed of multiple domains which are correlated	Self-Perception Profile for

Table 1

Theoretical Models of Self-Concept (Byrne, 1996)

	Description	Scales
Model	both with themselves and with global self-concept.	Children (Harter, 1985a)
Compensatory Model	Self-concept is composed of a global domain as well as multiple bipolar facets, some of which are inversely related. Individuals unconsciously compensate for low self-concept in one area by perceiving themselves as highly competent in other areas.	Self Description Questionnaire (Marsh, 1988)
Taxonomic Model	Self-concept has many facets, each of which has many levels. For example, one facet may be "external frame of reference" which has five levels (physical, moral, personal, family, and social).	Tennessee Self-Concept Scale (TSCS; Roid & Fitts, 1998); Multidimensional Self-Concept Scale (MSCS; Bracken, 1992)
Hierarchical Model	Self-concept consists of general self-concept, which is a higher order factor comprising multiple, domain-specific self-concepts that, while related, can be viewed as separate constructs.	Self Description Questionnaire (Marsh, 1988)

Figure 2. The Shavelson model of self-concept (Shavelson et al., 1976).


General:
General Self-Concept
Non-Academic Self-Concept
Academic and Non-Academic Self-Concept:
Academic Self-Concept
Social Self-Concept
Emotional Self-Concept
Physical Self-Concept
Subareas of Self-Concept:
English
History
Math
Science
Peers
Significant Others
Particular Emotional States
Physical Ability
Physical Appearance
Evaluation of Behavior in Specific Situations:

Self-Concept and Students with Learning Disabilities

Self-concept is of particular importance for students with LD for a number of reasons. First, as these students are often identified by difficulties in academic and social areas, they are clearly at-risk for lower self-concept. Second, the nature of the North American education system is such that students are first identified as having a LD and are subsequently provided with some form of remedial or special education services. Both the labelling and placement processes may adversely affect the self-concept of students with LD. Third, unlike students whose achievement suffers because of below average IQ, students with LD have average or above average intellectual capacity and, consequentially, may lead these students to be more aware of their academic difficulties and negative feedback from parents and teachers and thus result in lowered self-concept (Vaughn, Elbaum, & Boardman, 2001). Research findings examining differences between the self-concept of students with and without LD will be presented in the following section, as well as studies exploring the impact of various factors on self-concept.

General Self-Concept of Students with and without LD

In this section, a brief survey of research findings exploring differences in self-concept between students with and without LD will first be presented. Following this, research findings will be summarized that relate each of the following variables to the general self-concept of students with learning disabilities: (a) class placement, (b) social skills, (c) social self-concept, (d) student-teacher relationship, (e) parents' academic expectations, (f) academic self-concept, (g) socioeconomic status, and (h) gender. As well, as class placement is of particular interest in this study, research investigating the relationship between the settings where students with LD are placed and the eight variables listed previously will be presented. For students without disabilities, the influence of each of these variables on general self-concept will be explored, with the exception of class placement.

Differences in Self-Concept between Students with and without LD

There have been dozens of studies conducted to determine whether students with LD have self-concepts that are comparable to students without disabilities (see reviews by Chapman, 1988, Nowicki, 2003, and Zeleke, 2004). Findings regarding social and academic self-concept will be discussed in subsequent sections. In terms of general self-concept, the majority of studies have shown no difference between elementary-aged students with LD and those with average or normal achievement (e.g., Bear, Juvonen & McInerney, 1993; Bear & Minke, 1996; Bear, Minke, Griffin, & Deemer, 1998; Hagborg, 1996; Smith & Nagle, 1995; Vaughn, Elbaum, & Schumm, 1996). Fewer studies found that students with LD had significantly lower general self-concepts than those of average achievement (e.g., Beltempo & Achille, 1990; Harter, Whitesell, & Junkin, 1998; Tabassam & Grainger, 2002). Scales used most often included the Self-Perception Profile for Children (SPPC; Harter, 1985a) and the Perceived Competence Scale (PCS; Harter, 1982), both of which represent a multidimensional perspective of self-concept.

In comparison with low-achieving students, the vast majority of studies have found that the mean general self-concept scores of students with LD do not differ significantly (e.g., Clever, Bear, & Juvonen, 1992; Leonardi, 1993; Vaughn et al.,1996; Vaughn, Haager, Hogan, & Kouzekanani, 1992). The exception is an earlier study by La Greca and Stone (1990), where 57 LD students in grades four to six were compared to 32 low achieving classmates who were matched by sex and race. Students with LD rated their general self-concept on the SPPC (Harter, 1985a) as significantly lower than that of the peers, $F(2, 92) = 14.18$, $p < 0.001$.

In summary, research indicates that most students with LD have a general self-concept that is comparable to their typical- or low-achieving peers. However there is a small group of studies using various measures showing that students with LD may have a lower general self-concept than non-disabled peers. Issues such as varying assessment and diagnosis practices, placement settings and measures, could have certainly contributed to conflicting findings.

Influence of Socioeconomic Status on General Self-Concept

Students without disabilities. Socioeconomic status (SES) refers to one's position in society as determined by a variety of factors, including income, education, occupation, and accumulated wealth (Bollen, Glanville, & Stecklov, 2001). While the importance of SES in explaining student achievement has been well documented (Lytton & Pyryt, 1998;

Sirin, 2004), its role in relation to self-concept is less clear. Most large-sample studies have reported positive correlations ranging from weak to moderate (Khor, Coldiron, Skiffington, Masters, & Blust, 1988; Mullis, Mullis, & Normandin, 1992; Rosenberg & Pearlin, 1978).

Trusty, Peck, and Mathews (1994) examined the combined influence of SES and achievement on the self-concept of 392 fourth graders. Student self-concept was measured using the Self Observational Scales (SOS; Stenner & Katzenmeyer, 1979), which is a self-report questionnaire that assesses seven dimensions of self-concept. SES was determined by parent educational levels and school lunch data (i.e., free, reduced or fully paid). A composite score was created which included both of these variables. Researchers first conducted cluster analysis using SES and student achievement (a composite of math and reading scores) to determine if there were distinct groups of students in the sample. These groups, then, became the independent variable and the SOS scales comprised the dependent variables. As the overall MANOVA was significant, Wilks λ (21, 1097) = 0.76, $p < 0.01$, univariate analyses were conducted to determine which dimensions of self-concept varied depending on the clusters. For general self-concept, the result was significant, $F(3, 388) = 8.22$, $p < 0.0005$. Students with high achievement and high SES scored higher than all other clusters and students with low achievement and high SES scored lower than all other groups. The general self-concept of students in the low achievement and low SES group as well as the high achievement and low SES group, was not significantly different from the other clusters. Authors concluded that, for elementary-age students, general self-concept is more dependent on achievement than SES.

The general self-concept of 890 Flemish elementary school students was assessed using Rosenberg's unidimensional Self-Esteem Inventory (1967; Muijs, 1997). As well, Muijs created scales to measure students' academic self-concept in mathematics, language, and school subjects in general. The SES of each student was assessed using an index consisting of a combination of parent's occupation classification and highest acquired degree. Stepwise multiple linear regression was conducted to determine if SES and academic self-concept, along with other variables such as gender, ethnicity, family size, school commitment, and school achievement, were significant longitudinal predictors of general self-concept. As data were collected over two years, base year data were entered into the regression analysis and the dependent variable was taken from the second year of data collection. The strongest predictor of general self-esteem in the second year, not surprisingly, was general self-esteem in the base year ($\beta = 0.39, p < 0.001$). Also significant were academic self-concept in the base year ($\beta = 0.18, p = 0.001$) and family SES ($\beta = 0.17, p = 0.001$). A closer examination of the results indicated that the relationship between SES and general self-esteem was linear. When controlling for the other variables, students from low-SES families had lower general self-concept while those from high-SES families had higher scores. The general self-concept of students who were in the mid-SES range did not appear to be affected.

Students with learning disabilities. Research exploring the connection between SES and LD students' self-concept is scarce. The majority of the studies in this area are school-based and researchers generally match schools or students on SES, rather than including it as an independent variable (e.g., Leonardi, 1993; Morvitz & Motta, 1992).

In one study, Patrikakou (1996) tested models of school learning on students with and without LD which included measures of both SES and general self-concept. Patrikakou used a national database of eighth graders and created a general self-concept scale from available items (Cronbach's $\alpha = 0.85$). SES was operationalized as a composite of the highest educational level completed by either parent as well as family income. The correlation between SES and general self-concept was only 0.12 for students with LD and 0.11 for students without.

Findings regarding the relationship between SES and general self-concept are equivocal at best. Issues such as the use of varying measures for both constructs as well as the inclusion of a range of covariates further complicate this line of research. While Trusty et al. (1994) found that achievement was more closely related to self-concept than SES, Muijs (1997) reported a unique contribution of SES to general self-concept above school grades and academic self-concept. Finally, Patrikakou (1996) found that SES and general self-concept were weakly correlated for students with and without LD. Clearly, further research examining the role of SES in combination with other family and student variables will be necessary to determine its influence on general self-concept.

Influence of Gender on General Self-Concept

Students without disabilities. A number of studies have documented gender differences in self-concept. A meta-analysis conducted by Kling, Hyde, Showers, and Buswell (1999) examined 216 effect sizes drawn from 184 articles. Measures used in the studies most often were the Rosenberg Self-Esteem Scale (1967) and Harter's Self-Perception Profile for Children (1985a). Kling et al. reported an overall effect size of 0.21 indicating that males had a somewhat higher general self-concept than females. Significant differences were found between age groups such that mean effect sizes were smaller in elementary ($d = 0.16$) than middle school ($d = 0.23$), smaller in middle school than high school ($d = 0.33$), and smaller in college ($d = 0.18$) than high school. Gender differences were particularly apparent when students were in late adolescence (i.e., 15 – 18 years old; $d = 0.33$).

It is important to note that measures such as the Rosenberg Self-Esteem Scale (1967) represent a unidimensional view of self-concept. Wylie (1979) suggested that gender differences observed in responses on such scales may actually reflect "…larger, counterbalancing gender differences in specific components of self-concept" (in Marsh & Ayotte, 2003, p. 688). Accordingly, researchers, including Eccles (1987, Eccles & Blumenfeld, 1985; Wigfield, Eccles, Yoon, & Harold, 1997) and Marsh (1989; Marsh & Ayotte, 2003, Marsh, Craven, & Debus, 1991) have examined this possibility. Both researchers and their associates reported gender stereotypic differences in students' self-perceptions. Specifically, Marsh and Ayotte (2003) administered a multidimensional instrument, the Self-Description Questionnaire, to 1,103 students in elementary school. Marsh and Ayotte found that boys had higher self-concepts in physical appearance ($r = -0.34$), math competence ($r = -0.24$), and math affect ($r = -0.17$). Girls had higher self-concept in reading competence ($r = 0.08$) and reading affect ($r = 0.12$). Wigfield et al. (1997) reported similar findings in a study of 615 elementary school students using a measure developed by Eccles and her colleagues (see Eccles, 1984; Eccles & Wigfield, 1995). Girls reported significantly higher self-competence in reading and instrumental music and boys reported significantly higher competence in math and sports.

Students with learning disabilities. The effect of gender on the self-concept of students with learning disabilities has rarely been investigated. Beltempo and Achille

(1990) examined the self-concept of 131 students with and without LD in five elementary schools, using the unidimensional Piers-Harris Children's Self-Concept Scale. The authors found that students with LD reported significantly lower self-concept than students without LD. As well, boys reported significantly higher self-concept than girls. However, there was no interaction which indicates that the gender effect held regardless of LD status.

In summary, there is a growing body of evidence that boys have slightly higher general self-concept than girls, particularly in late adolescence. Examinations of domain-specific self-concept reveals stereotypic patterns of student perception, namely girls rating themselves as more competent in reading and music and boys rating themselves more competent in mathematics and sports. There is no evidence to date that these trends differ for students with learning disabilities, although few studies have examined this possibility.

Influence of Social Skills on General Self-concept

Students without disabilities. Generally, research examining the relationship between social skills and general self-concept has been focused on students experiencing problems with behaviour and interpersonal relationships (e.g., Kavale & Forness, 1996; Wiener & Tardif, 2004). Consequently, little is know about the effect of social skills on general self-concept for students without disabilities. In one study by Merrell, Cedeno, and Johnson (1993), this relationship was investigated for 41 students in grades 5 and 6. Teachers completed the School Social Behavior Scales (SSBS; Merrell, 1993) and students completed the Self-Perception Profile for Children (SPPC; Harter, 1985a). Merrell et al. reported a significant correlation between general self-concept and the total social competence score, $r = 0.34$, $p < 0.05$. Thus, students who had better social skills were also more likely to have a higher self-concept.

Students with learning disabilities. The social skills deficits of students with LD have been documented for some time. Kavale and Forness (1996), in an oft-cited meta-analysis, concluded that "...findings indicated that about 75% of students with LD can be differentiated from their NLD peers through measures of social competence" (p. 233). Kavale and Forness also concluded that the perceived academic competence was a major factor in perceptions of social competence. Specifically, students who rated themselves as doing poorly academically were more likely to have fewer interaction, reduced acceptance, greater rejection, and lower social status according to teachers and peers.

In terms of class placement, Wiener and Tardif (2004) found that teachers rated LD students receiving in-class support as having comparable social skills to students in resource rooms, $t(7) = 0.35$. Similarly, teachers of students in inclusive classes rated students' social skills no differently than those in self-contained classes, $t(7) = -0.76$.

Taking the collective research into consideration, there is little evidence that the social skills of students with or without LD have a significant effect on general self-concept. Likewise, class placement does not appear to be a major influence on the social skills of students with LD. However, these relationships have not been researched extensively. This may be due to the common assumption that social difficulties are characteristic of all students with LD. It is possible that there is a range of social proficiency among students with LD and that those with strengths in this area have better peer relationships and higher self-concept. This hypothesis is supported by studies that have reported that, when behaviour problems are controlled for, the self-concept of students with and without LD does not differ (Vaughn et al., 1996). For this reason, social skills will be included in the current model.

Teacher rating of student social skills will be included in the current model as influencing student social and academic self-perceptions as well as students' relationship with their teacher and parent expectations.

Influence of Social Self-Concept on General Self-Concept

Students without disabilities. Social self-concept refers to the ways in which individuals perceive their competence in peer relationships. Correlations between social and general self-perception are generally estimated to be moderate and positive. For example, Marsh and his colleagues have reported correlations ranging from 0.23 to 0.37 using their Self-Description Questionnaire (Marsh et al. 1991, 1998; Marsh & McDonald-Holmes, 1990). Harter reports, in the manual for the Self-Perception Profile for Children (1985a), correlations between social and general self-concept ranging from 0.45 to 0.60.

Students with learning disabilities. Nowicki (2003) conducted a meta-analysis of the social self-perceptions of students with LD compared to their non-LD classmates across a number of placement types. She found that, in comparison to average or high achieving classmates, effect sizes for self ratings of social acceptance were medium, indicating that students with LD rated themselves as significantly less accepted than their peers ($d' = 0.69$). Students with LD also received lower peer ratings than those with low achievement, although the difference was not significant ($d' = 0.13$).

Smith and Nagle (1995) compared the perception of social acceptance of 116 third- and fourth-grade students. Fifty-nine of these students had been identified as having a LD and were receiving special education services in a resource room for one or two hours per day. All students completed the Self-Perception Profile for Learning Disabled Students (SPPLDS; Renick & Harter, 1988). Results of a univariate ANOVA indicated that students with LD rated their social acceptance as significantly lower than those in the comparison group, $F(1, 112) = 4.10$, $p < 0.01$, although their rating of the importance of this domain did not differ.

There have been a number of studies that have investigated the effects of inclusion and class placement on students' perceptions of their peer relationships. Vaughn et al. (1996) followed a group of elementary students with LD who were participating in an inclusive model for the first time. Also included in the study were classmates who were classified as either low (LA) or average to high achieving (AHA). Students completed adaptations of Harter's self-concept measures used by the primary author in previous research (Vaughn et al., 1992). The social and general self-concepts of students were assessed in the fall and then again in the spring. Correlations were found to be significant between the two constructs (fall: $r = 0.32$, $p < 0.05$; spring: $r = 0.46$, $p < 0.05$). However, differences were not found between the LD, LA, and AHA groups on either social or general self-concept in the fall or spring.

In a similar study, Vaughn, Elbaum, Schumm, and Hughes (1998) surveyed 185 students in grades three through six. Students attended two types of inclusive classes that employed either a co-teaching model or a consultation/collaboration model. Fifty-nine students had been identified as having a LD by the local school district. Of the non-disabled students, 72 were low to average achieving and 54 were high achieving according to teacher ratings in language arts. All students completed the Friendship Quality Survey (Berndt & Perry, 1986), a self-report measure that assesses children's perceptions of their friendships, in the fall and again in the spring. Mean scores on the Friendship Quality Survey did not differ significantly by achievement group. However, for students with LD, those in the consultation/collaboration model made significant gains on this measure over the year whereas students in the co-teaching classes did not. Researchers concluded that the friendships of students with LD benefited from their placement in the consultation/collaboration class.

Wiener and Tardif (2004) described a number of aspects concerning the peer relationships of students with LD, who received support either periodically in a general education class or in a resource room (mild/moderate disability), or full-time in either a general education class or a self-contained special education class (severe disability). All students completed three sociometric rating scales: the Friendship Quality Questionnaire – Revised (FQQ-R; Parker & Asher, 1993), the Loneliness and Social Dissatisfaction Scale (LSDS; Asher, Hymel, & Renshaw, 1984), and the Self-Perception Profile for Learning Disabled Students (SPPLDS; Renick & Harter, 1988).

Results showed that, according to same-sex peer ratings, students receiving periodic support in a general education class were more socially accepted than those receiving support in resource rooms, $t(71) = 2.21$, $p < 0.05$. No differences in social acceptance were found between those in full-time general or self-contained classes. Sociometric ratings of nominated and corroborated/reciprocated friends did not differ depending on class placement. While children in full-time general education classes reported lower levels of loneliness than children in self-contained classes, no differences were found between the other two classes. On the non-academic areas of the SPPLDS, MANOVAs revealed no significant differences between groups in social acceptance, behavioural conduct, physical appearance, and athletic competence.

Finally, Forman (1988) administered the SPPLDS (Renick & Harter, 1988) and the Social Support Scale for Children (SSS; Harter, 1985b) to 51 children with LD. The students attended three types of placements: (a) segregated schools for students with LD, (b) regular schools with periodic resource room, and (c) regular schools for those who had been diagnosed but were not yet receiving services. Forman conducted a 2 (Social Support: High vs. Low) X 3 (Placement) ANOVA on the self-concept mean scores of the SPPLDS. While a main effect for social support was found, placement was not found to be significant. A more detailed examination of the four sources of social support (parent, teacher, classmate, friend) revealed that classmate support accounted for a significant amount of variance in general self-concept, $\beta = 0.60, p < 0.01$ as well as academic self-concept, $\beta = 0.70, p < 0.01$. Student perceptions of social support from teachers or parents were not significant predictors of self-concept.

In summary, social self-concept research indicates that there is a moderate, positive relationship between student self-perception of peer relationships and general self-concept. Research exploring the relationship between social and general self-concept has been focused more on students with than without LD, due to the social deficits often observed in the former group. No evidence for an effect of class placement on student ratings has been found.

Influence of Teacher-Student Relationship on General Self-Concept

Students without disabilities. The quality of the relationships between students and their teachers has been found to have an important influence on students' general self-concept. It has been suggested that students who feel supported, liked, and well-treated by their teachers are more motivated and engaged in their school work, and also possess higher self-concept than students with less positive relationships (Birch & Ladd, 1997; Deci & Ryan, 1985; Midgley, Feldlaufer, & Eccles, 1989). Ryan, Stiller, and Lynch (1994) surveyed the perceived relationships of 606 middle school students with their parents, teachers, and peers. Students completed the Inventory of Adolescent Attachments (IAA; Greenberg, 1982) and the Multidimensional Self-Esteem Inventory (MSEI; O'Brien & Epstein, 1988). Specific areas of attachment included felt security, emotional utilization, school utilization, and emulation. Results of regression analyses indicated that student ratings of teacher support did not predict general self-esteem (felt security: $\beta = 0.00$, emotional utilization: $\beta = 0.04$, school utilization: $\beta = 0.08$, emulation: $\beta = 0.00$). However, student perceptions of [illegible] relationship with their teacher were significantly related to school engagement (ranging from $\beta = 0.14$ to $\beta = 0.32$) and positive coping skills (ranging from $\beta = 0.14$ to $\beta = 0.30$). These findings suggest that while student-teacher relationships may not have a direct effect on general self-concept, they may be indirectly influential through motivational variables.

In another study by Reddy, Rhodes, and Mulhall (2003), 2,585 grade six students were followed through to eighth grade. Reddy et al. were interested in whether positive student perceptions of teacher support served to protect students against depression and lowered general self-concept as they entered middle school. Measures included the multidimensional Self-Evaluation Questionnaire (DuBois & Felner, 1991), adapted versions of the Classroom Environment Scale (Trickett & Moos, 1973), and the Children's Depression Inventory (Kovacs, 1980). Results of cross-domain latent growth modeling indicated that student perceptions of decreasing teacher support corresponded with increases in depression and decreases in general self-concept. The reverse was also true, so that perception of increased support from teachers was associated with decreased depression and increased general self-concept.

Finally, Mboya (1996) surveyed the self-concept and perceptions of parent and teacher support of 1,192 adolescents. Measures included the Perceived Teacher Behavior Inventory and the multidimensional Self-Description Inventory, both constructed by the author (1994 and 1993 respectively). Mboya found a significant correlation between general self-concept and a composite of student perceptions of their teachers as being supportive, interested in them and being a source of encouragement ($r = 0.40, p < 0.05$).

Students with learning disabilities. Jordan and Stanovich have conducted a series of studies examining teacher attitudes and beliefs towards students with disabilities (Jordan, Lindsay, & Stanovich, 1997; Jordan & Stanovich, 2001; Stanovich, Jordan, & Perot, 1998). Jordan and Stanovich created the Pathognomonic-Interventionist Scale (PATH/INT), which assesses teachers' beliefs along a continuum. Teachers scoring at the PATH end of the scale believe that student learning difficulties are due to internal, permanent characteristics of the student that are immune to teacher intervention. Those teachers scoring at the INT end of the scale viewed themselves as responsible for the learning of all students and strove to create interventions to meet student needs.

In one study conducted by Jordan and Stanovich (2001), 48 students in grades three and four completed the unidimensional Piers Harris Children's Self-Concept Scale (Piers, 1969); their nine teachers completed the PATH/INT scale. Two groups of students participated in the study: those who were either receiving special education services or were considered at risk for academic failure in the next year, and their classmates who were achieving at average levels. Teachers were grouped into three categories based on their PATH/INT scale scores: those at the PATH end, those at the INT end, and those in the middle of the scale (MID). Classroom observers also coded the interactions between the teachers and one student from each group, in terms of frequency and level of cognitive engagement.

The results of a two (student group) by three (teacher group) analysis of variance indicated that, while the main effects of student group, F(2, 47) = 6.19, $p < 0.01$ and teacher group, F(1, 47) = 6.74, $p < 0.01$ on general self-concept were significant, the interaction was not, F(2, 47) = 0.21. Specifically, students in the special education/at-risk group had significantly lower general self-concept scores than average-achieving students. As well, the scores of students whose teachers were at the PATH end of the scale were significantly lower than those in either the MID or INT groups. Finally, in regards to the interactions between teachers and students, a number of observed patterns emerged. Teachers in the PATH group typically interacted with special education/at-risk students using lower levels of cognitive engagement, while average students received high level engagement. For the INT group, however, teachers interacted with both groups of students using high level cognitive engagement. This latter finding indicates that teacher beliefs about the nature of learning difficulties have a major impact on their practice which, in turn, has a significant effect on general self-concept of students with and without disabilities.

Vaughn et al. (1996) assessed students' ratings of closeness with their teachers using the Social Alienation Scale (Seidel & Vaughn, 1991). In the fall term, students with LD in inclusive settings considered themselves as more socially alienated from their teachers than their average and high achieving peers but no different that their low-achieving students. In the spring term, no significant differences between the groups were found. An examination of the mean scores revealed that while the scores of students with LD remained stable, the low and average to high-achieving students became slightly more alienated from their teachers.

In summary, although findings are mixed, there is evidence that students who feel that their teachers like them and are willing to help them, feel better about themselves. As well, general self-concept is affected by teacher beliefs about student learning difficulties. Students whose teachers believe that they are responsible for learning and feel competent in implementing interventions have higher self-concept than those with a more deterministic view.

Influence of Parent Expectations on General Self-Concept

There is extensive evidence that parents' expectations or aspirations for their child's educational attainment have a significant impact on student achievement for students with and without LD. This effect has been shown in numerous studies to be mediated by parent behaviours (Davis-Kean, 2005; Englund, Luckner, Whaley, & Egeland, 2004; Sy & Schulenberg, 2005) and student expectations (Patrikakou, 1996). However, the influence of parent expectations on academic and general self-concept has rarely been investigated with LD or non-LD populations. Parent expectations will be included in the model as affecting general self-concept, both directly as well as indirectly, through academic self-concept.

Influence of Academic Self-Concept on General Self-Concept

Students without disabilities. While it is generally assumed by educators that academic self-concept is strongly and positively related to general self-concept, findings have not been conclusive. In a review of 128 studies by Hattie (1992), correlations between the two constructs were examined. Hattie found that approximately 83% of the correlations were positive, 2% were zero, and 15% were negative. Marsh and Shavelson (1985) report the correlation between academic and general self-concept in their Self-Description Questionnaire (SDQ) of .48.

Muijs (1997), as described previously, conducted a longitudinal investigation of elementary-aged students. He assessed the academic and general self-concept of the students when they were in the fourth grade and again the following year. He also collected demographic information including SES, gender, ethnicity, family size, and school achievement. Results of regression analyses indicated that the two strongest predictors of general self-concept in the second year were base year academic ($\beta = 0.18$, $p < 0.001$) and general self-concept ($\beta = 0.39$, $p < 0.001$). Muijs also conducted a similar analysis to determine predictors of academic self-concept. As with general self-concept, the base year academic self-concept score was the most significant predictor ($\beta = 0.45$, $p < 0.001$), followed by base year school achievement ($\beta = 0.33$, $p < 0.001$) and family SES ($\beta = 0.07$, $p < 0.05$). Muijs concluded that these findings are evidence of the significant and unique influence of academic self-concept on general self-concept.

Smith and Nagle (1995), using the SPPLDS (Renick & Harter, 1988), found that student ratings of academic self-concept in reading, writing, and mathematics were significantly correlated with general self-concept ($r = 0.29$, $p < 0.05$; $r = 0.30$, $p < 0.05$; $r = 0.40$, $p < 0.01$ respectively) for 57 students of average or above academic ability in grades three and four.

Students with learning disabilities. With the development of multidimensional theories of self-concept (e.g., Marsh & Shavelson, 1985), many educational researchers began to focus on the academic aspect of student self-perception. This shift wasparticularly salient for students with LD, as it was hypothesized that while differences may not be evident in general self-concept, the perceptions of students in areas of difficulty, such as academics, would be lower than those of average achievement. A number of studies have supported this assumption (Chapman, 1988; Grolnick & Ryan, 1990; Hagborg, 1996; Montgomery, 1994; Vaughn et al., 1996).

A number of reviews have concluded that the academic self-concept of students with LD is significantly lower than for students without LD (Chapman, 1988; Vaughn et al., 2001; Zeleke, 2004). In a recent meta-analysis, Nowicki (2003) found that students with LD held lower academic self-concepts than average to high achieving students, with a medium effect size (d' =0 .69). Only three studies compared students with LD to their low achieving peers and, while students with LD rated their academic competence as somewhat lower, the average effect size was not significant ($d' = 0.22$).

Smith and Nagle (1995) found that the academic self-concept ratings of students with LD in writing, spelling and mathematics, were significantly correlated with general self-concept ($r = 0.38, p < 0.01$; $r = 0.35, p < 0.01$; $r = 0.28, p < 0.05$ respectively). Similarly, Vaughn et al. (1996) found that the correlation between academic self-concept and general self-concept for students with LD was positive and significant, $r = 0.27, p < 0.05$.

In terms of class placement, Elbaum (2002) conducted a meta-analysis of the self-concept of students with LD in general classes, resource rooms, self-contained classes, and special schools. The effect size for academic self-concept summarized across ten independent samples was not significant ($Q_w = 27.25$, d = 0.12), although the effect sizes ranged widely, from -0.08 to 0.31, indicating variability across the studies. Elbaum concluded that, since type of special education placement does not appear to affect the academic self-concept of students with LD, the needs and preferences of individual students must be taken into account when placement decisions are being made.

Wiener and Tardif (2004) compared the academic self-concept of two groups of students using the SPPLDS (Renick & Harter, 1988). The first group included those with mild to moderate LD who received services either through periodic in-class or resource room support and the second group included those with severe LD who attended either inclusive or self-contained classes. In terms of students' self-perceptions of academics, student ratings of competence in reading, spelling, and writing, were similar across settings. However, those receiving in-class supports reported significantly higher ratings in math than those in resource rooms (Mann Whitney Test: $U(z) = 12.79, p < 0.001$). Wiener and Tardif concluded that, for many students with LD, the type of placement where they receive special education services does not impact on their self-concept.

Marsh and his colleagues (Marsh, 1987; Marsh, Chessor, Craven, & Roche, 1995; Marsh, Koeller, & Baumart, 2001; Marsh, Kong, & Hau, 2000) have conducted a series of studies testing his model of the big-fish-little-pond effect (BFLPE). Marsh suggests that, when students develop their academic self-concept, they are always doing so within some frame of reference. For young students, this is generally the class and school they are attending. The majority of Marsh and his colleague's empirical work has documented the lowered self-concept of gifted students attending academically selective schools.

These students are “big fish” in a school setting that includes a range of abilities since their achievement would be above average. However, in a “small pond”, such as a gifted class or school, each is one of many high achievers. Thus their frame of reference changes and their academic self-concept declines accordingly. This theory may also have applicability to students with LD. If they are placed in a general class setting, where they typically achieve at levels lower than their peers, their academic self-concept may be relatively low. However, if they are placed in a setting where their peers all have LD, such as a segregated class or school, their academic self-concept should be relatively higher. However, there is some evidence that students with LD continue to compare themselves to typically-achieving classmates, regardless of their placement (Byrne, 1996).

In summary, academic self-concept has been found to have a positive, moderate correlation with general self-concept for students both with and without LD. Placement has not been shown to have a significant impact on the academic self-concept of students with LD.

Influence of Class Placement on General Self-Concept

Some of the benefits of inclusion and general class placement that are cited most often include improved social skills, increased social acceptance, and higher self-esteem (Vaughn et al., 2001). However, despite these claims, there are few published studies that have compared the general self-concept of LD students across various placements. A meta-analysis conducted by Elbaum (2002) compared the self-concept of students with LD in various placements, including general class, pull out (resource room), and self-contained class. Elbaum summarized 36 research reports, only 9 of which were published in professional journals. The remainder were dissertations or conference presentations. The Piers-Harris Children's Self-Concept Scale (Piers, 1984) was used in the majority of the studies; other measures included the SPPLDS (Renick & Harter, 1989), the Perceived Competence Scale for Children (Harter, 1982), and the Culture Free Self-Esteem Inventory (Battle, 1981). Elbaum concluded that there was "no systematic association between the self-concept of students with LD and their educational placement" (p. 221). The single placement comparison where differences could be seen was that between a self-contained classroom in a regular school and placement in a special school. This result was based on a single study conducted in Israel, that reported on comparisons of classes of students in grades 3, 5, and 7 (Butler & Marinov-Glassman, 1994). Class placement was significant for students in grade five in that students with LD in special schools had higher general self-concept than those in self-contained classes in regular schools, $F(2, 83) = 5.68, p < 0.01$.

A recent Canadian study, Wiener and Tardif (2004), investigated the social and emotional functioning of 117 students with LD. For those with mild to moderate learning disabilities, placements included in-class support and resource room. In-class support consisted of a special education teacher coming in to the general education class to either work directly with the LD students or to co-teach with the classroom teacher. Students in a resource room placement were withdrawn for special education services for between 60 and 90 minutes per day. Students with more severe disabilities were either placed in a general class setting, where they were co-taught by a general and a special education teacher, or in a self-contained special education class in a regular school. The general self-concept of students from the mild/moderate placements, as measured by the SPPLDS

(Renich & Harter, 1988), were compared as were those from the severe placements. None of the comparisons were significant, indicating that placement did not have a significant effect on the self-concept of these students.

In a second Canadian study (Beltempo & Achille, 1990) compared the general self-concept of 83 elementary-aged students with LD. These students had been assessed the previous spring as meeting the school board criteria for LD and had been assigned to a variety of placements for the upcoming fall. These included a self-contained special class, resource class, or a general class placement. It is important to note that the general class placement was not an inclusive one; rather, the resources were not available within the schools to meet the needs of these students so they were left in regular classes without extra support. Students completed the unidimensional Piers-Harris Self-Concept Scale (Piers, 1969) at the beginning of the fall semester and again at the end of the year. Results showed that, while students made similar gains over the year, those in the self-contained special class had significantly lower scores than those in the resource room placement, $F(1, 127) = 4.51, p < 0.05$.

Morvitz and Motta (1992) compared the general self-concept of senior elementary students with LD in a self-contained special class and those receiving special education services in a resource room. Results showed that students with LD in resource rooms had Piers-Harris Self-Concept Scale scores (Piers, 1969) that were not significantly different than those in self-contained special classes, $t(64) = 0.72, p < 0.24$.

In summary, there is no evidence that class placement has an effect on the self-concept of students with LD. However, the studies described previously have looked solely at the *direct* effect of this variable. It is more likely that class placement influences general self-concept indirectly, through variables such as social skills, social self-concept, student-teacher relationship, parent expectations and academic self-concept.

Chapter Three: Methods

Model Specification

The purpose of this study was to investigate the effects of individual and environmental variables on the general self-concept of students with and without learning disabilities (LD). For students with LD, these variables included: (a) socioeconomic status, (b) gender, (c) class placement, (d) social skills, (e) social self-concept, (f) student-teacher relationship, (g) parents' expectations, (h) academic self-concept, and (i) general self-concept. For students without LD, identical variables were included, with the exception of class placement.

Incorporating the variables listed above, structural equation models were constructed depicting the hypothesized relationship between variables for students with and without learning disabilities (Figure 3 and Figure 4). In structural equation modeling, variables are specified as either endogenous or exogenous. Endogenous variables (η) are often referred to as "outcome" variables; they are influenced by the exogenous variables in the model and are the variables that researchers are trying to explain. Exogenous variables (ξ) represent background information and are those which researchers are not attempting to explain but that influence the endogenous or outcome variables. The unidimensional arrows depicted in the model indicate the influence of one concept on another; a change in one concept from which the arrow originates influences a change in another concept to which the arrow points. In the present model, socioeconomic status and gender are exogenous variables. Class placement, social skills, social self-concept, student-teacher relationship, parent expectations, academic self-concept and general self-concept are endogenous variables.

Figure 3. Theoretical model for students with learning disabilities.

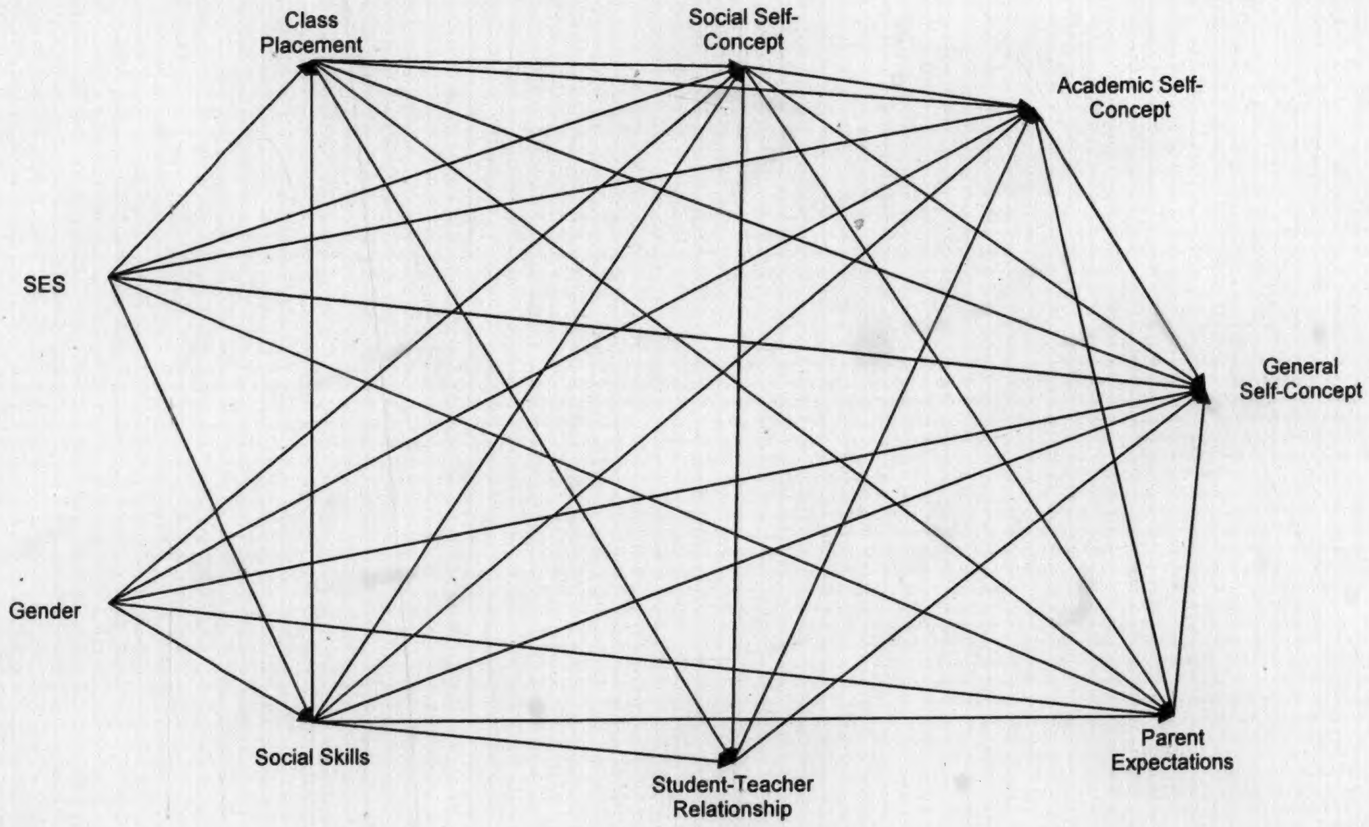
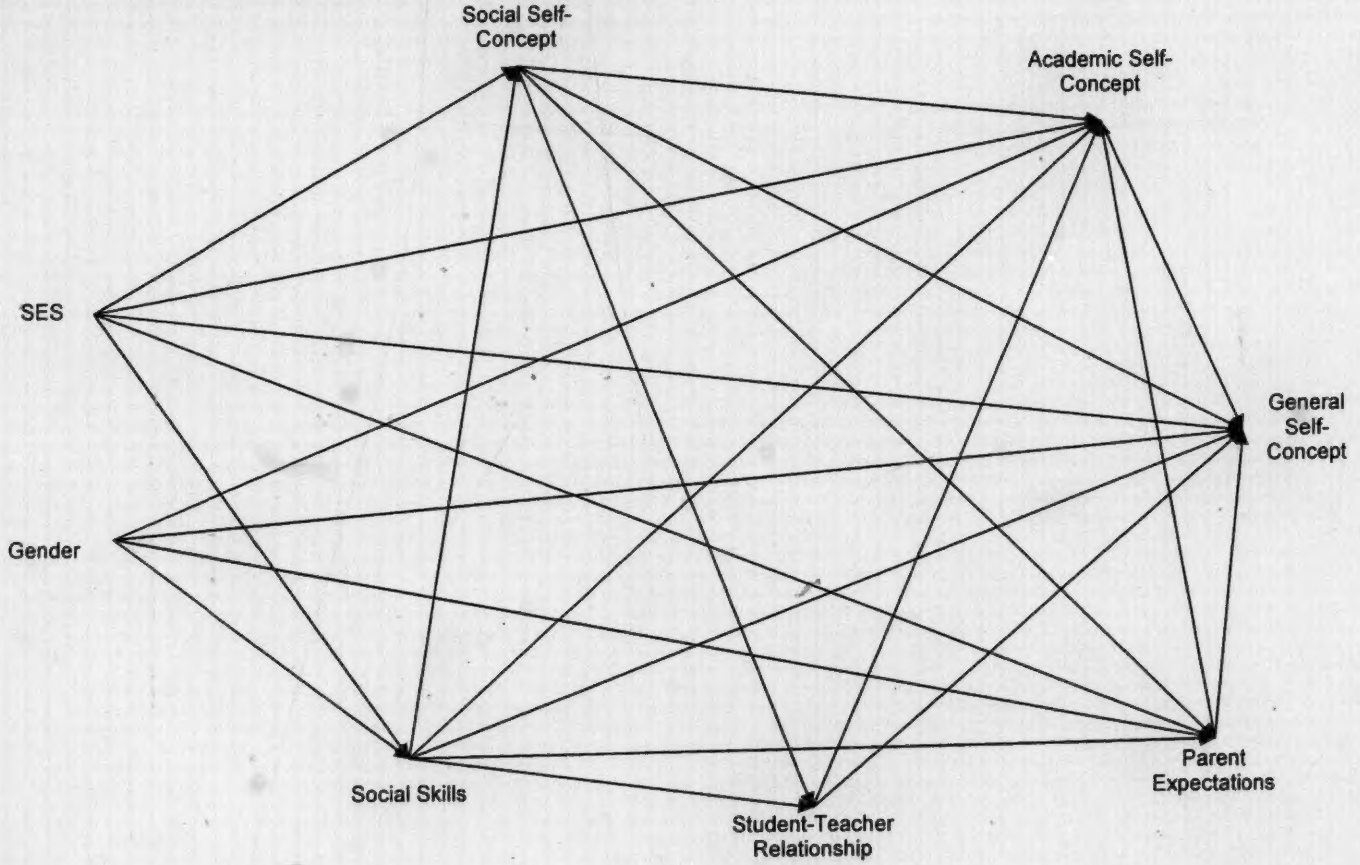

Class
Placement
Social Self-
Concept
Academic Self-
Concept
SES
General
Self-Concept
Gender
Social Skills
Student-Teacher
Relationship
Parent
Expectations

Figure 4. Theoretical model for students without disabilities.


Social Self-Concept
Academic Self-Concept
SES
General Self-Concept
Gender
Social Skills
Parent Expectations
Student-Teacher Relationship

General self-concept is shown as being affected directly by a number of endogenous variables: class placement, social self-concept, student-teacher relationship, parent expectations, and academic self-concept. The effect of these variables on general self-concept is indicated by the direction of the arrows. It was hypothesized that class placement would have a direct effect on general self-concept in that the less segregated the placement, the better the students would feel about themselves. Variables within the model can also affect general self-concept indirectly, as their influence is mediated by other variables. In addition to direct effects, then, class placement was also assumed to have an indirect or mediated effect on general self-concept through its effect on social skills, social self-concept, parent expectations, and academic self-concept.

Social skills were hypothesized to affect general self-concept both directly and indirectly, through class placement, social self-concept, student-teacher relationship, parent expectations, and academic self-concept. Social self-concept was theorized to influence self-concept directly, as well as indirectly through student-teacher relationship, parent expectations, and academic self-concept. Student-teacher relationship was assumed to affect general self-concept directly, as well as indirectly through academic self-concept. Finally, academic self-concept was posited to influence general self-concept directly. The model that was tested for students without disabilities (Figure 4) was identical to that for students with LD with the exception of the class placement variable.

Data Source

Indicators of the variables of interest in this study were found within the National Longitudinal Study of Child and Youth data set (NLSCY). According to Human Resources and Skills Development Canada (HRSDC, 1996),

> The National Longitudinal Survey of Children and Youth (NLSCY) was developed with the objective of collecting data to identify risk factors for Canadian children, thereby improving society's understanding of the important process of child development. It is expected that information from the NLSCY will provide strategic insight for the formulation of more effective programs and policies for children at risk. (p. i)

This dataset is maintained jointly by Statistics Canada and Social Development Canada (SDC; formerly Human Resources and Development Canada). Data are collected every two years and the fifth cycle has recently been released. The unit of analysis in the NLSCY is the child. Surveys are completed by the child's parents, teachers and, for children over the age of 10, themselves. Topics within the surveys include the physical, emotional, and cognitive development of the child; parenting practices; education-related factors; and influences such as peers, schools, and the larger community. Children also completed several standardized measures, including the Peabody Picture Vocabulary Test (PPVT-R) for children aged 4 and 5, reading and mathematics tests for children aged 6 through 15, and cognitive tests for 16 and 17 year olds.

When the survey began in 1994, approximately 22,831 children were sampled. Children were followed longitudinally. Cross-sectional samples were introduced to replace age groups that were no longer represented by the original group (e.g., 0-1 year olds), as well as for particular populations for special projects (e.g., 2-5 year olds from New Brunswick). By Cycle 5 (2002/2003) 15,163 children remained in the longitudinal sample that began in 1994.

For the purposes of the current study, data from Cycles 2 and 3 were analysed.

The primary factor in this choice was the participation of students' teachers which, in NLSCY, has been relatively low. In Cycle 1, only 50% of teachers completed the survey. By Cycle 5, the education questionnaires for students other than those in Kindergarten were excluded completely due to low response rates. Maximum response rates were observed for Cycles 2 and 3.

Indicators

Structural equation modeling uses latent variables rather than measured variables as might be more typically seen in path analysis. As a latent variable, student-teacher relationship, for example, is a concept that the researcher believes exists in the "real world" and, as such, has expected relationships with other variables, such as general self-concept. The measurement of the latent variables can be described as a separate model. Whereas the paths from one latent variable to another (e.g., social self-concept to academic self-concept) constitute the structural model, the paths from latent to measured variables constitute the measurement model. The items used in the present study to operationalize the variables that were chosen to comprise the measurement model are detailed in Table 2. These were chosen following an extensive review of previous studies, summarized in Chapter 2.

Three scales were included in the model. One was the Social Skills scale, which was completed by teachers and was intended to measure social and personal skills demonstrated by the child in the class. The scale consisted of the following items which were rated on a five-point scale ranging from 1 = never to 5 = always: Please indicate how often this student demonstrates each of the following: (a) cooperative work with other students, (b) cooperative play with other students, (c) following rules, (d) following

Table 2

Variable Indicators from the NLSCY

Variables	Indicators	Coding	Variable Name
Exogenous Variables (ξ)			
Socioeconomic Status	A standardized score derived from: (a) Highest level of education of both parents or single parent (b) Household income (c) Occupational status of both parents or single parent	Scores range from approximately -2.0 to +2.0, with higher scores reflecting higher SES	BINHbD8L (PMK)
Gender	Parent reported gender of child	1=Male 2=Female	BMMCQ02 (PMK)
Endogenous Variables (η)			
Class placement	Where does this student receive this special/resource help (e.g., special education)? ®	1= Exclusively in a segregated school/class 2=Primarily in a regular classroom but with periodic removal 3=Exclusively within a regular classroom	CETScQ20 (Teacher)
Social skills	Social Skills Scale (10 items)	Scores range from a low of 0 (poor social skills) to a high of 40 (high social skills)	CETSS17 (Teacher)

Table 2

Variable Indicators from the NLSCY

Variables	Indicators	Coding	Variable Name
Social Self-Concept	Friends Scale (4 items)	Scores range from a low of 0 (low perception of competency) to a high of 16 (high perception of competency)	CFFCS01 (Student)
Student-teacher relationship	In general, my teacher treats me fairly ®	1=Never 5=All the time	CSCCQ12 (Student)
Parent expectations	How far do you hope your child will go in school?	1=Primary/Elementary, 2=Secondary, 3=College/trade, 4=University degree	CEDCQ18B (PMK)
Academic self-concept	How well do you think you are doing in your schoolwork? ®	1=Very poorly 5=Very well	CSCCQ02 (Student)
General self-concept	General Self Scale (4 items)	Scores range from a low of 0 (low perception of self) to a high of 16 (high perception of self)	CAMCS02 (Student)

® Responses have been recoded so that high scores reflect positive responses instructions, (e) respect for other adults, (f) respect for the property of others, (g) respect for other youth, (h) self-control, (i) self-confidence, and (j) acceptance of responsibility for own actions.

NLSCY documents indicated that items for this scale were selected from an article by Freeman and Hatch (1989). Freeman and Hatch analyzed the report cards of six districts in Ohio in terms of the most common expectations for students' social and personal development. The internal consistency of the scale was measured by the NLSCY using Cronbach's alpha, which was reported by the NLSCY as 0.93 (Statistics Canada, 1999, p. 84).

The Social Self-Concept scale, referred to in the NLSCY as the Friends scale, consisted of four items that were taken from the Peer Relations Sub-Scale of the Self-Description Questionnaire (SDQ; Marsh, 1983). According to Marsh (Marsh, Craven, & Debus, 1998), this scale measures "student perceptions of how easily they make friends, their popularity, and whether others want them as a friend" (p. 1051). The Social Self-Concept scale consists of the following items, which were rated by students on a five point scale ranging from 1 = false to 5 = true: (a) I have many friends, (b) I get along easily with others my age, (c) I feel that my close friends really know who I am, and (d) most others my age like me. Marsh's SDQ is one of the most well-validated measures of self-concept for children (Byrne, 1996). A factor analysis of the scale was conducted for the NLSCY to test the theoretical construct. According to NLSCY documentation, analyses revealed a single factor. Cronbach's alpha was reported as 0.78 (Statistics Canada, 1999, p. 84).

The third scale was General Self-Concept, entitled About Me by the NLSCY.

This was also adapted from the SDQ (Marsh, 1983). According to Marsh (Marsh, Craven, & Debus, 1998), this scale is intended to measure "student self-perceptions of themselves as effective, capable individuals who have self-confidence and self-respect and are proud and satisfied with the way they are" (p. 1051). Students responded to the following four items on a five point scale ranging from 1 = false to 5 = true: (a) In general, I like the way I am; (b) overall, I have a lot to be proud of; (c) a lot of things about me are good; and (d) when I do something, I do it well. Factor analysis conducted by the NLSCY identified a single factor. Cronbach's alpha was reported as 0.73 (Statistics Canada, 1999, p. 126).

Participants

Students were selected based on three criteria, the foremost of which was their teachers' responses to a two-part question in Cycle 3 of the NLSCY. First, teachers were asked, "Does this student receive special/resource help because a learning disability, a physical, emotional, behavioural, or other problem limits the kind or amount of school work he/she can do?" For teachers who responded in the affirmative, the following was asked: "What type of problem limits this student's ability to do school work in a regular classroom?" Teachers were given options which included learning disabilities, physical disabilities, emotional/behaviour difficulties, speech/language disorders, and mental disabilities. Those students for whom teachers indicated "learning disability" were included in the sample for the present study. Students identified as having multiple limitations (learning disability and one or more of the following: physical disability, speech/language disorder, or mental disability) were not included in the LD sample.

The second criterion for inclusion in the study was student age. A number of the variables that were included in the model were obtained through student self-report surveys which were administered to students aged 10 and older. As well, in an effort to create a sample with similar school experiences, the final criterion was that all subjects were taught by a single teacher. In summary, students who were between 10 and 14 years of age, who were taught by a single teacher, and whose teachers indicated that they were receiving special education services for a learning disability, were included in the study.

A sample of students who were not receiving special education services was also included in the study to provide a point of reference. These students met identical inclusion criteria.

Data Analysis

Structural equation modeling (SEM) was used to test the relationships among variables identified in the present study. SEM is "a multivariate method for determining the magnitude of influence of one or several presumed causes on one or several presumed effects" (Keith, 1999). The hypothesized effects are specified in a model which comprises the researcher's theory about the relationships among variables. The model is then compared to an existing data set in order to determine how close the hypothesized relationships come to the observed relationships among the variables. The larger the difference between the estimated and actual data (residual), the poorer the fit of the model.

The analyses were completed using LISREL 8 (Jöreskog & Sörbom, 1996), which is one of the most well respected and widely used programs for conducting SEM. LISREL 8 solves structural equations by using maximum likelihood estimation (MLE) to estimate all model parameters (i.e., path values) simultaneously. This differentiates SEM from basic regression analyses, where path values would be calculated independently and the value of one path value would not affect the value of another path. MLE attempts to minimize the differences between the covariance matrix implied by the theoretical model and that observed in the dataset. LISREL 8 also provides information regarding the goodness of fit of the data and that can be used to diagnose problems with the model.

Measurement Model

The measurement model is an extremely important part of SEM as it involves the careful selection of measures that will best capture the conceptual level latent variables. Clearly, though, individuals' responses on these questions may be influenced by many elements other than the latent variable including response biases, misinterpretation of the questions, as well as recent occurrences (e.g., test grade). Thus an individual's response on an item will be caused both by the "real" variable (e.g., general self-concept), and by extraneous influences which constitute measurement error.

Measurement Error

The measurement error variance for each of the indicators is typically estimated in advance of model testing. Values are fixed to include a specific proportion of the variance in each indicator with the remaining variance being left to the corresponding underlying concept. Proportions assigned for each variable as well as the resulting values (percentage x item variance) are presented in Table 3.

Socioeconomic status is a composite score consisting of parent education, income, and occupation. Reponses to items for each of these are categorized by the interviewer and are subject to inconsistencies in coding. For example, educational credentials obtained in other countries may cause confusion and the occupation classifications, which were created in the 1970s are certainly not relevant for many jobs today. For these reasons, SES was assigned a 10 % error variance.

Table 3

Proportion of Error Variance Assigned and Resulting Values

		Error Variance Value	
Indicator	Proportion	LD Model	NLD Model
Socioeconomic Status	0.10	0.04	0.04
Gender	0.01	0.00	0.00
Class Placement	0.10	0.05	--
Social Skills	0.15	5.79	5.22
Social Self-Concept	0.15	1.26	1.11
Student-Teacher Relationship	0.10	0.15	0.08
Parent Expectations	0.10	0.06	0.04
Academic Self-Concept	0.10	0.08	0.07
General Self-Concept	0.15	1.44	0.97

Gender is assumed to be almost perfectly correlated with actual sex as this item was answered by parents during a lengthy in-person interview. However, a 1% error variance was assigned to account for interviewer or data entry error.

Class placement was determined by teachers' responses. Due to probable disparities in teacher interpretation of the various settings, a 10 % error variance was assigned.

Social skills were assessed via teacher responses to various items which were combined to create a scale. The 15 % error variance reflects issues arising from teacher interpretation of the behaviours described, individual tolerance for the behaviours, the frame of reference in terms of behaviours exhibited by the rest of the class, and the teacher's relationship with the child. All of these factors in addition to the child's "actual" social skills are contained in the score assigned to children on this measure.

Social and general self-concept were assigned error variances of 15 %. Issues such as social desirability bias, the positive wording of all items which may encourage rote response, and transient events which may influence responses on a certain day, may also be included in students' responses on these items.

Student-teacher relationship was assigned an error variance of 10 %. This construct was assessed by a single indicator, which may not have captured the full extent of the students' perception of their relationship with their teacher. As well, students' interpretation of the item (i.e., fairness) may vary.

Parents expectation for their child's educational attainment was assigned an error variance of 10 %. Parents may have been influenced by social desirability factors in their response to this item or may not have knowledge of educational possibilities (i.e., differences between colleges and universities).

Finally, academic self-concept, unlike social and general self-concept, was assessed by a single item. It was assigned an error variance of 10 % because of the general nature of the item. It is assumed that students will estimate an average across their competence in various subjects in order to respond to this item. Students may, however, feel differently about their abilities in math and language arts and may be responding to different subject areas in their response.

Model Fit

Much controversy exists regarding the evaluation of the "fit" of a model. A model is said to fit the observed data "to the extent that the model-implied covariance matrix is equivalent to the empirical covariance matrix" (Schermelleh-Engel, Moosbrugger, & Muller, 2003, p. 23). However, there are a number of measures of model fit, and they may not agree as to the extent to which the model matches the data. Using MLE allows for a test of significance, namely a χ^2 test of overall fit, which tests the null hypothesis that the differences between the elements of the model and the dataset are all zero. If the *p*-value is larger than 0.05, then the null hypothesis is not rejected and the model is regarded as compatible with the population covariance matrix. However, there are a number of drawbacks to a sole reliance on the χ^2 as a measure of model fit. First, the χ^2 statistic is very sensitive to sample size; the increased power gained from a large sample may result in rejection of a model even though there is a close fit (Hu & Bentler, 1995). Hayduk (1987) suggests that χ^2 is informative for sample sizes ranging from 50 to 500. Second, the χ^2 test decreases with the complexity of the model. This is a function of the degrees of freedom which consist of the total number of elements in the data matrix less the total number of parameters to be estimated. Clearly, if there are many parameters to be estimated, the degrees of freedom will be smaller and the χ^2 value will increase accordingly. Thus, the χ^2 test may indicate a good fit when in fact the model is simply overparameterized (Schermelleh-Engel et al., 2003). In summary, χ^2 should be included as one indicator in an assessment of model fit and issues such as sample size, multivariate normality of variables, and degrees of freedom should be carefully evaluated (Bollen, 1989; Hayduk, 1987; Hu & Bentler, 1995).

There are a number of descriptive measures of overall fit. Like the χ^2, these descriptive measures indicate the extent to which the structural equation model corresponds to the data model. The descriptive measures most often used in LISREL 8 are presented in Table 4 as well as criteria for acceptable fit. These measures together with their criteria were used in the present study to evaluate the overall fit of the school learning models.

Missing Data

As with all longitudinal data sets, particularly secondary sources, missing values present serious problems for researchers. The NLSCY is no exception, particularly as data from multiple respondents (i.e., children, parents, and teachers) are included in the data set. An analysis of the missing values was conducted using SPSS Missing Values Analysis 14.0 (MVA) (2006). An examination of the missing values revealed that there was no apparent pattern, indicating that data were missing at random, which is a requirement for the use of many imputation methods. The SPSS analysis also provided information regarding the proportion of data missing for each variable (see Table 5). Proportions of missing values were low; the largest proportion was 0.079 and the average percentage was 2.9 for the LD sample and 4.5 for the NLD sample. Consequently, the Expectation Maximization (EM) algorithm was used to compute maximum likelihood estimates of the means, standard deviations, and the covariance matrix. The EM algorithm:

> …uses a two-step iterative procedure where missing observations are filled in, or imputed, and unknown parameters are subsequently estimated. In the first step (the E step), missing values are replaced with the conditional expectation of the

Table 4

Descriptive Measures of Overall Model Fit

Measure	Description	Characteristics	Suggested Criteria
Root mean square error of approximation (RMSEA)	Measure of approximate fit in the population	Relatively independent of sample size; Favours parsimonious models	Good fit: $\leq .05$; Adequate fit: .05-.08 (Hu & Bentler, 1999; Keith, 1999)
Goodness of Fit Index (GFI)	Measure of amount of variances and covariances jointly accounted for by the model	Not independent of sample size but less affected than χ^2; Favours parsimonious models and larger sample sizes	Good fit: $\geq .95$ Adequate fit: $\geq .90$ (Keith, 1999; Kelloway, 1998; Schermelleh-Engel et al., 2003)
Normed Fit Index (NFI)	Compares the fit of target model to independence model (model that postulates no interaction between variables)	Negatively affected by small sample sizes	Good fit: $\geq .95$ Adequate fit: $\geq .90$ (Kelloway, 1998; Schermelleh-Engel et al., 2003)
Comparative Fit Index (CFI)	Compares the fit of target model to independence model under a noncentral χ^2 distribution	Less affected by sample size than NFI	Good fit: $\geq .97$ Adequate fit: $\geq .95$ (Hu & Bentler, 1999; Keith, 1999; Schermelleh-Engel et al., 2003)

> missing data given the observed data and an initial estimate of the covariance matrix. In the second step (the M step), ML estimates of the mean vector and covariance matrix are obtained just as if there was no missing data using the sufficient statistics calculated at the previous E step (Enders, 2001, p. 135).

Once the covariance matrix was produced by SPSS using the EM algorithm, it was transferred into LISREL for model testing. As an added precaution, estimates were calculated using LISREL's full information maximum likelihood (FIML) technique; which is another approach commonly used to deal with missing data (Allison, 2003). All parameter estimates were identical to those calculated using the SPSS analysis. Once missing data was identified, the EM algorithm was used to compute maximum likelihood estimates of the means, standard deviations, and the covariance matrix.

Table 5

Percentage of Missing Values for LD and NLD Samples

Variables	LD	NLD
Class Placement	5.7	--
Social Skills	7.9	2.6
Social Self-Concept	2.8	6.8
Student-Teacher Relationship	6.6	4.9
Parent Expectations	0.0	7.0
Academic Self-Concept	0.0	5.6
General Self-Concept	0.0	5.9
Socioeconomic Status	0.0	3.2
Gender	5.7	0.0

Chapter Four: Results

The results are presented in three parts. First, the demographic characteristics of the LD and NLD samples are described. Second, the results of testing and re-specification of models of self-concept for both samples of students are presented. Finally, the individual effects of variables within the model are examined.

Demographic Characteristics

The demographic characteristics of the LD and NLD samples are summarized in Table 6. While the gender distribution was approximately equal for the NLD sample, there was a greater number of male students in the LD sample. This gender difference is supported by extensive literature that has documented the higher incidence of learning disabilities in boys (Hallahan et al., 2005). The average age for students in the LD sample was 11.35 (*SD* = 1.20) and for students in the NLD sample the average age was 11.09 (*SD* = 1.15).

Model Testing and Re-specification

Students with Learning Disabilities

The theoretical model for the sample of students with learning disabilities was tested first. The means, standard deviations, and internal consistencies for the scales are presented in Table 7, along with the correlations among the measures. The fit indices, which are listed in Table 8, indicate that the model provided a very good fit to the data and explained approximately 58 percent of the variance in general self-concept. However, there were a number of paths whose values (e.g., standardized regression weights) were less than 0.05 and thus not meaningful. These included the following paths (see Figure 3):

1) SES to Social Self-Concept

2) Class Placement to Academic Self-Concept

3) Class Placement to General Self-Concept

4) Social Skills to Class Placement

5) Social Skills to Student-Teacher Relationship

6) Student-Teacher Relationship to General Self-Concept

7) Parent Expectations to General Self-Concept

Table 6

Demographic Characteristics of LD and NLD Samples

	LD		NLD	
	(N = 106)		(N = 1477)	
Variable	*n*	%	*n*	%
Gender of Child				
Female	40	37.7	723	51.0
Male	66	62.3	754	49.0
Age of Child				
Ten	30	28.3	600	40.6
Eleven	34	32.1	390	26.4
Twelve	25	23.6	306	20.7
Thirteen	9	8.5	117	7.9
Fourteen	8	7.6	64	4.3
Mean (SD)	11.35 (1.20)		11.09 (1.15)	

Table 7

Correlations, Means, Standard Deviations and Cronbach's α for the LD Sample

Indicator	1	2	3	4	5	6	7	8	9
Means	1.95	27.17	12.76	4.00	3.19	3.73	12.86	-0.49	1.38
Standard Deviations	0.73	6.23	2.91	1.22	0.79	0.89	3.11	0.61	0.49
1. Class Placement	-								
2. Social Skills	0.003	0.910[a]							
3. Social Self-Concept	-0.168	0.002	0.660[a]						
4. Student-Teacher Relationship	-0.110	-0.043	0.161	-					
5. Parent Expectations	-0.094	0.278	-0.071	0.037	-				
6. Academic Self-Concept	-0.073	0.206	0.484	0.139	0.115	-			
7. General Self-Concept	-0.152	0.164	0.579	0.138	0.025	0.554	0.800[a]		
8. SES	-0.040	0.142	0.003	-0.014	0.190	-0.014	-0.050	-	
9. Gender	0.051	0.339	0.091	0.102	0.337	0.241	0.092	0.056	-

[a] Cronbach's α

Table 8

Fit Statistics for the LD Sample

Models	χ^2 (df)	*p*	RMSEA	GFI	NFI	CFI	R^2
Theoretical Model	1.93 (4)	< 0.75	0.00	1.00	.99	1.00	.58
Revised Model	2.58 (11)	< 0.99	0.00	1.00	.98	1.00	.58

Since more parsimonious models are desirable (Hayduk, 1987), these paths were deleted and the revised model was re-tested. The fit indices for the second model are also listed in Table 8. The change in χ^2 indicates a slight improvement in fit and the additional indices remained uniformly high. Consequently, the second model was accepted. The final model of self-concept for students with LD, including individual standardized path coefficients, is presented in Figure 5.

Students without Disabilities

The theoretical model was next tested for students without disabilities. The correlations, means, and standard deviations for the measured variables used in this analysis are presented in Table 9. The values of the fit indices, listed in Table 10, indicate that the model provided a good fit to the data and explained approximately 40 percent of the variance in general self-concept. However, there were a number of paths whose values were less than .05 and thus not meaningful. These included the following paths:

1) SES to Social Self-Concept
2) SES to Academic Self-Concept
3) SES to General Self-Concept
4) Gender to Parent Expectations
5) Social Skills to General Self-Concept
6) Social Self-Concept to Parent Expectations
7) Parent Expectations to General Self-Concept

Figure 5. Model of self-concept for students with learning disabilities.

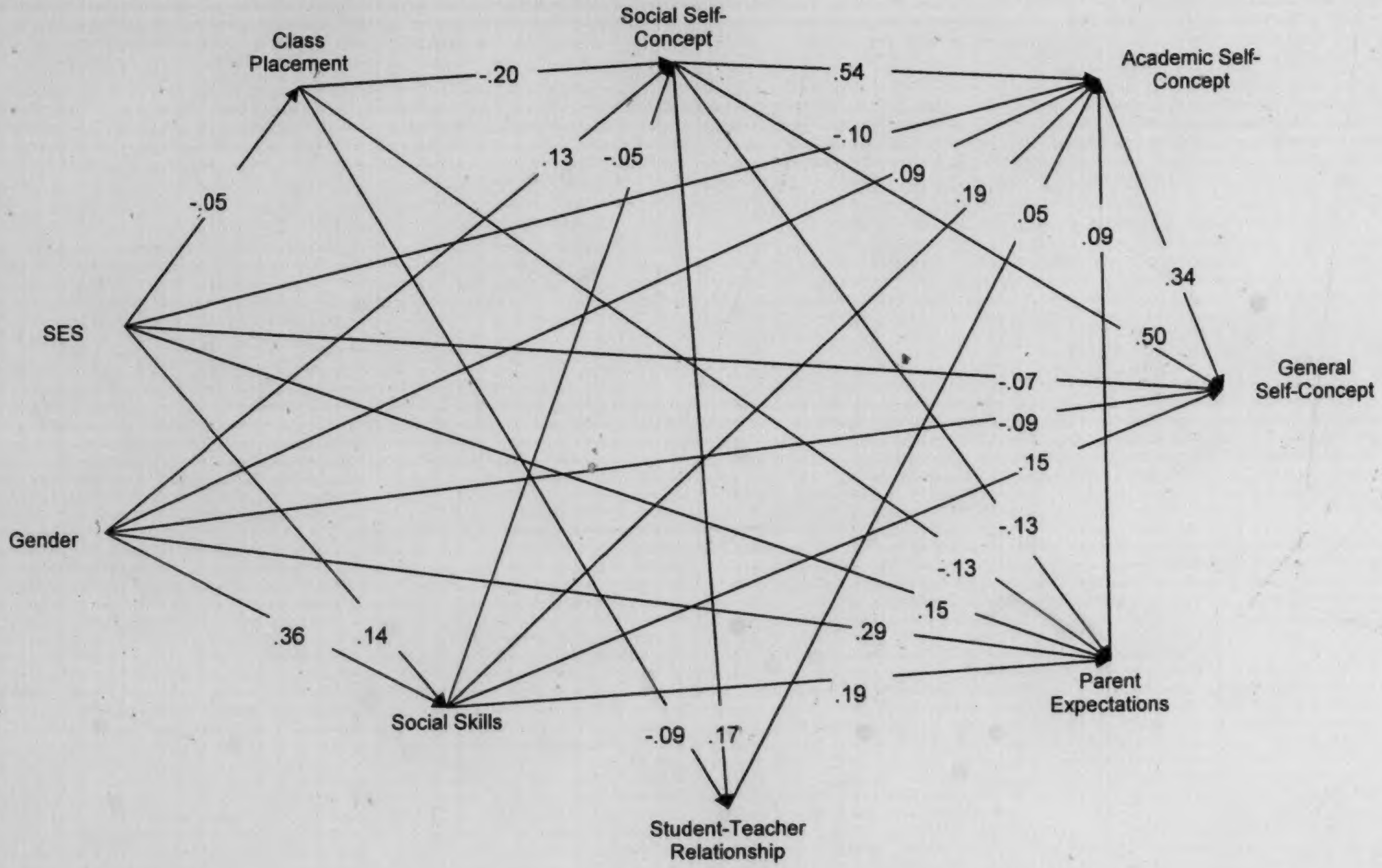

Class Placement
Social Self-Concept
Academic Self-Concept
General Self-Concept
SES
Gender
Social Skills
Student-Teacher Relationship
Parent Expectations
-.20
.54
-.05
.13
-.05
-.10
.09
.19
.05
.09
.34
.50
-.07
-.09
.15
-.13
-.13
.15
.29
.19
.36
.14
-.09
.17

Table 9

Correlations, Means, Standard Deviations and Cronbach's α for the NLD Sample

Indicator	1	2	3	4	5	6	7	8
Means	30.98	13.16	4.36	3.65	4.14	13.45	0.00	1.51
Standard Deviations	5.90	2.72	0.89	0.63	0.81	2.55	0.65	0.50
1. Social Skills	0.930[a]							
2. Social Self-Concept	0.159	0.750[a]						
3. Student-Teacher Relationship	0.261	0.155	-					
4. Parent Expectations	0.143	0.059	0.051	-				
5. Academic Self-Concept	0.298	0.229	0.249	0.172	-			
6. General Self-Concept	0.177	0.432	0.307	0.044	0.355	0.740[a]		
7. SES	0.184	0.061	0.029	0.260	0.121	0.072	-	
8. Gender	0.247	0.127	0.078	0.070	0.046	-0.035	0.015	-

[a] Cronbach's α

Table 10

Fit Statistics for the NLD Sample

Models	χ^2 (df)	*p*	RMSEA	GFI	NFI	CFI	R^2
Theoretical Model	1.99 (3)	< 0.58	0.00	1.00	1.00	1.00	.40
Revised Model	8.78 (11)	< 0.55	0.00	1.00	.99	1.00	.40

As with the model for the LD sample, these paths were deleted and the revised model was tested. As can be seen in Table 10, the fit indices did not change significantly and the model remained an excellent fit to the data. Again, since parsimony is desired, the second model was accepted. The final model of self-concept for NLD students, including individual standardized path coefficients, is presented in Figure 6.

Model Effects

Standardized path values are basically standardized regression weights, and as such, may be interpreted as the number of standard deviations change in a construct expected to follow a one standard deviation increase in another construct, holding all the other relationships constant. For example, a one standard deviation change in social skills is expected to lead to an increase of 0.19 standard deviations in academic self-concept, after accounting for the other effects (see Figure 5). Path values that are unstandardized can be interpreted as the number of units of change in a construct expected to follow a one unit increase in another construct, holding all other effects constant. In addition to direct effects, variables may also have indirect (mediated) effects as well as total effects, which are calculated by summing direct and indirect effects. The direct, indirect, and total standardized effects of model variables on General Self-Concept for both groups of students are shown in Table 11. Effect sizes are categorized according to Keith (1993), who states that "for manipulable influences on learning, paths of .05 -.10 may be considered small but meaningful influences, paths of .10 -.25 may be considered moderate influences, and paths above .25 may be considered large effects" (p. 26).

Standardized path values are used to describe the models for students with and without learning disabilities and unstandardized values are used when comparing similar

Figure 6. Model of self-concept for NLD students.

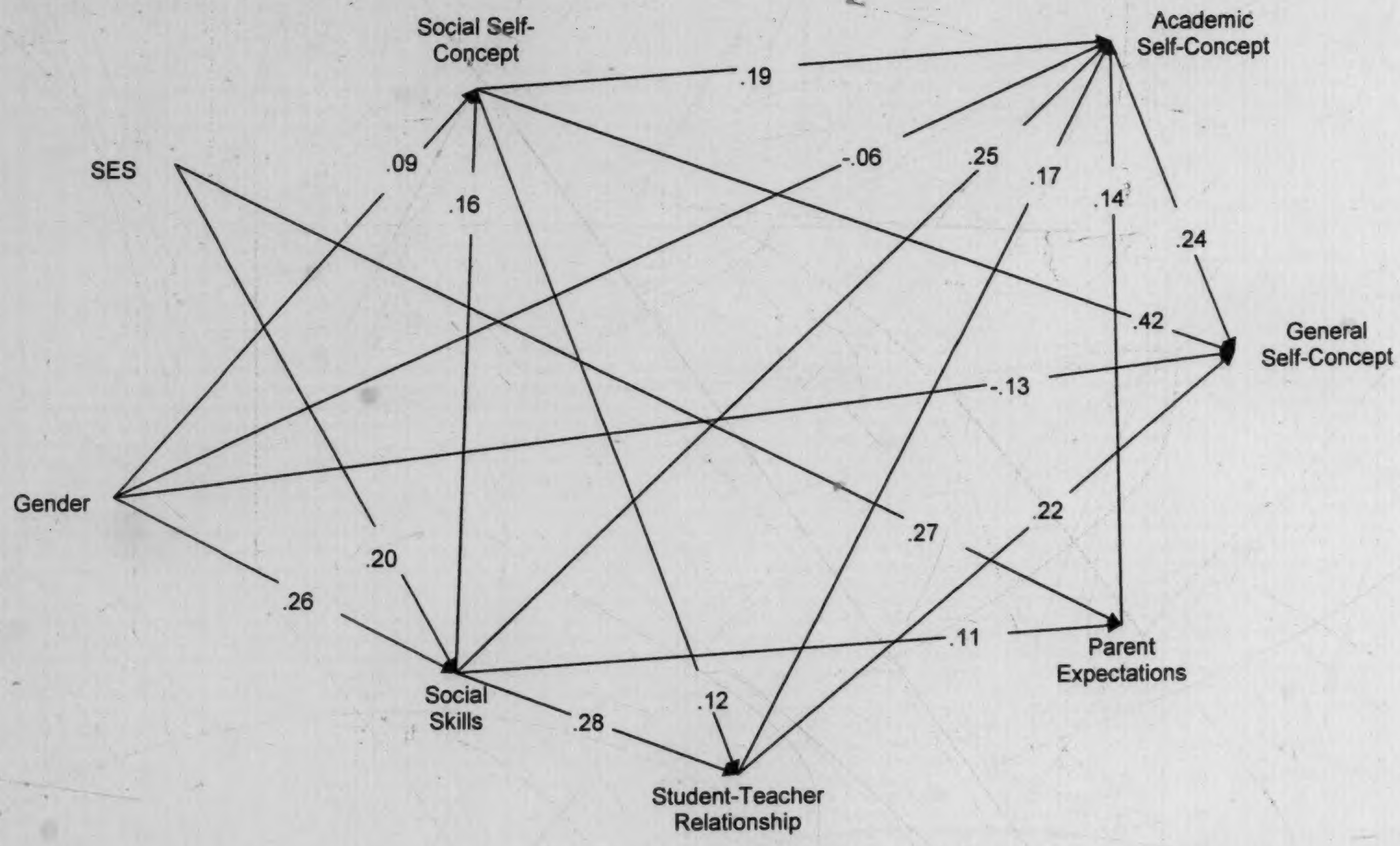

Social Self-Concept
Academic Self-Concept
SES
General Self-Concept
Gender
Parent Expectations
Social Skills
Student-Teacher Relationship
.19
.09
.16
-.06
.25
.17
.14
.24
.42
-.13
.27
.22
.20
.26
.11
.12
.28

Table 11

Standardized Effects of Model Constructs on General Self-Concept for the LD and NLD samples

Variable	LD Sample			NLD Sample		
	Direct	Indirect	Total	Direct	Indirect	Total
Socioeconomic Status	-0.07	0.01	-0.06	--	0.05	0.05
Gender	-0.09	0.20	0.11	-0.13	0.08	-0.05
Class Placement	--	-0.15	-0.15	-	-	-
Social Skills	0.15	0.04	0.19	--	0.22	0.22
Social Self-Concept	0.50	0.18	0.68	0.42	0.08	0.50
Student-Teacher Relationship	--	--	--	0.22	--	0.26
Parent Expectations	--	--	--	--	--	--
Academic Self-Concept	0.34	--	0.34	0.24	--	0.24

paths in the two models. The direct, indirect, and total unstandardized effects for both groups of students are shown in Table 12. While standardized paths lend themselves more readily to an understanding of the various magnitudes of effects in a model, comparisons benefit from discussion of "real" unit changes (Kenny, 1979).

Students with Learning Disabilities

Socioeconomic status. SES had a small negative total effect on general self-concept (-0.06), the majority of which was direct (-0.07; see Table 11). SES had a small, negative direct effect on class placement (-0.05) and academic self-concept (-0.10), and positive moderate direct effects on social skills (0.14) and parent expectations (0.15). Thus, students from higher SES families were somewhat more likely to be in less inclusive class placements and to have lower academic self-concepts. However, their teachers rated them as having better social skills and their parents had higher academic expectations of them.

Gender. Gender had a small negative direct effect on general self-concept (-0.09), indicating that boys had slightly higher general self-concept than girls. However, the total effect of gender was positive (0.11) due to the indirect effects. Gender had a small positive direct effect on academic self-concept (0.09), a moderate positive direct effect on social self-concept (0.13), and large positive direct effects on social skills (0.36) and parent expectations (0.29). Thus, girls reported having higher social and academic self-concepts than boys, their teachers rated them as having better social skills, and their parents had higher academic expectations of them.

Class placement. Class placement had a negative moderate total effect on general self-concept (-0.15). This effect was entirely indirect and was mediated by social self-

Table 12

Unstandardized Effects of Model Constructs on General Self-Concept for the LD and NLD Samples

Variable	LD Sample			NLD Sample		
	Direct	Indirect	Total	Direct	Indirect	Total
Socioeconomic Status	-0.36	0.06	-0.30	--	0.20	0.20
Gender	-0.50	1.15	0.65	-0.60	0.41	-0.19
Class Placement	--	-0.60	-0.60			
Social Skills	0.08	0.02	0.10	--	0.09	0.09
Social Self-Concept	0.53	0.20	0.73	0.40	0.07	0.47
Student-Teacher Relationship	--	0.04	0.04	0.61	0.11	0.72
Parent Expectations	--	0.12	0.12	--	0.13	0.13
Academic Self-Concept	1.16	--	1.16	0.73	--	0.73

concept (-0.20), student-teacher relationship (-0.09), and parent expectations (-0.13). Thus, students who are in more inclusive placements possessed lower social self-concept, more negative relationships with their teachers, and their parents reported having lower expectations for them in terms of educational attainment.

Social skills. Social skills had a positive moderate total effect on general self-concept (0.19). Most of this effect was direct (0.15) although a small proportion was indirect (0.04). Social skills had a small negative direct effect on social self-concept (-0.05) and had a positive moderate direct effect on academic self-concept (0.19) and on parent expectations (0.19). Thus, students who exhibited more prosocial behaviours in the classroom (according to their teacher) had higher general and academic self-concept, slightly lower social self-concept, and their parents had higher expectations of their educational attainment.

Social self-concept. Social self-concept had a large positive direct effect (0.50) and a moderate indirect effect (0.18) on general self-concept. The total effect was 0.68. Social self-concept had a moderate positive direct effect on student-teacher relationship (0.17), a moderate negative direct effect on parent expectations (-0.13), and a large positive direct effect on academic self-concept (0.50). Thus, students who had a higher social self-concept reported better relationships with their teachers and had higher general and academic self-concepts. However, their parents' academic expectations were somewhat lower.

Student-teacher relationship. While student-teacher relationship had a small, positive direct effect on academic self-concept (0.05), it had no total effect on general self-concept.

Parent expectations. Parent expectations also had a small positive direct effect on academic self-concept (.09) but had no total effect on general self-concept.

Academic self-concept. Academic self-concept had a large positive direct (and total) effect on general self-concept (0.34). Thus, students who report their academic competency as higher also feel better about themselves in general.

Summary. For students with learning disabilities, general self-concept was influenced most strongly and positively by social and academic self-concept. Social skills and class placement had moderate total effects; social skills had a positive influence while class placement had a negative impact. Neither student-teacher relationship nor parent expectations had meaningful total effects on general self-concept. Finally, SES and gender had small but meaningful effects on general self-concept; the former having a negative total effect and the latter having a positive total effect such that girls had higher general self-concept scores than boys.

Students without Disabilities

Socioeconomic status. SES had a small total effect on general self-concept (0.05; see Table 11). Its effect is entirely indirect and is mediated by social skills (0.20) and parent expectations (0.27). Students from higher SES families had better classroom social skills and their parents held higher academic expectations of them.

Gender. Gender had a small negative total effect on general self-concept (-0.05), indicating that boys had slightly higher ratings than girls. Gender had a moderate negative direct effect on general self-concept (-0.13) and indirectly impacted on general self-concept through social skills (0.26), social self-concept (0.19), and academic self-concept (-0.06). Thus, girls were rated by their teachers as having better social skills, and the girls rated themselves as having lower general and academic self-concept and higher social self-concept.

Social skills. The total effect of social skills on general self-concept was moderate and positive (0.22). This effect was entirely indirect. Social skills had a large positive direct effect on academic self-concept (0.25) and student-teacher relationship (0.28). Social skills also had a moderate positive direct effect on parent expectations (0.11). Thus, students whose teachers rated them as having better social skills reported higher academic competency, a more positive relationship with their teacher, and their parents had higher expectations of them.

Social self-concept. Social self-concept had a large total effect on general self-concept. It had a large positive direct effect (0.42), as well as a small positive indirect effect (0.08) through student-teacher relationship (0.12) and academic self-concept (0.19). Thus students who had higher social self-concept reported having better relationships with their teachers and reported higher academic competency.

Student-teacher relationship. Student-teacher relationship had a moderate positive total effect on general self-concept which was mostly direct (0.22). It also affected general self-concept indirectly, through its moderate positive direct effect on academic self-concept (0.17). Thus, students who had better relationships with their teachers reported higher academic competence and felt better about themselves in general.

Parent expectations. Parent expectations had a negligible total and indirect effect on general self-concept (0.03). They had a moderate positive direct effect on academic self-concept (0.14). Thus students whose parents have higher academic expectations of them had higher academic self-concept.

Academic self-concept. Academic self-concept had a moderate positive effect on general self-concept which was entirely direct (0.24). Thus students who rated themselves as more competent academically rated themselves as having higher general self-concept.

Summary. For students without disabilities, the largest influences on general self-concept included social self-concept and student-teacher relationship, followed closely by academic self-concept and social skills. These total effects were all positive. SES had a positive small but meaningful total effect and the remaining influences (i.e., parent expectations and gender) had total effects that were negligible.

Comparison of Model Effects

Socioeconomic Status

SES had a differential impact on students with and without LD (see Table 12). While the absolute magnitude of the unstandardized total effects was comparable (0.30 and 0.20 respectively), the directionality of the effects was opposite. For students with LD, SES had a negative effect and for students without LD, a positive effect.

Gender

As in the case of SES, gender impacted on students with and without LD quite differently. The unstandardized total effect of gender on the general self-concept of students with LD was 0.65 and for those without, -0.19. Thus, being a girl with LD results in a gain in general self-concept of 0.65 and being a girl without LD results in a loss in general self-concept of 0.19.

Social Skills

Teacher-rated social skills had similar influences on general self-concept for students with and without learning disabilities. The unstandardized total effect of social skills was similar for students with learning disabilities (0.10) and those without (0.09).

Social Self-Concept

Students' ratings of their social self-concept had the largest effect on general self-concept for both samples of students. The unstandardized total effect for students with learning disabilities was 0.73 and for those without, 0.47. Thus social self-concept plays a more important role for students with LD than those without LD.

Student-Teacher Relationship

For students with learning disabilities, their relationships with their teachers had no total effect on their general self-concept. However, this was one of the most influential variables for students without learning disabilities. The unstandardized total effect was 0.04 for students with LD and 0.72 for those without LD.

Parent Expectations

The influence of parent expectations of academic attainment on general self-concept was similar for students with and without learning disabilities. For students with LD, the total unstandardized effect was 0.12 and for those without LD, 0.13.

Academic Self-Concept

Academic self-concept was an important influence for both LD and non-LD students but had a larger effect on the general self-concept of students with LD. Its total standardized effect on general self-concept was 1.16 for students with LD and 0.73 for those without LD.

Summary

The comparison of the LD and non-LD models highlighted the differences and similarities between the influences on the general self-concept of these students. The constructs included in both models appeared to be equally valid as indicated by the fit indices. However, there were important differences in the magnitude of the total effects for the two groups. Social self-concept, academic self-concept, and gender had stronger influences on students with LD than those without LD. Student-teacher relationship and SES had stronger influences on students without LD than those with LD. As well, in terms of directionality, the effect of SES on students with LD was negative and that of gender was positive. Conversely, for students without LD, SES had a positive effect and gender had a negative effect.

Chapter Five: Discussion

The main results of the present study are threefold. First, for students with and without LD, models of the influence of individual, family and school characteristics on student's general self-concept fit the data extremely well. Second, class placement, a variable of particular interest in the present study, had a moderate, negative total effect on the general self-concept of students with learning disabilities. Finally, while there were many similarities between the magnitude and nature of the effects of model variables on general self-concept for both groups of students, a number of differences were also found.

Specifically (a) student-teacher relationship had no effect on students with LD but had a positive, moderate effect on students without LD; (b) social skills had similar total impacts for both groups but effects were largely direct for students with LD and indirect for students without LD; (c) gender had a small, positive effect on students with LD and a small, negative effect on students without LD; and (d) SES had a small, negative effect on students with LD but a small, positive impact on students without LD. The influence of class placement will first be examined, followed by a discussion of the differences between the effects of model variables for students with and without LD. Following this, educational implications as well as study limitations will be presented.

Effects of Class Placement

Findings regarding the influence of class placement on general self-concept emphasize the importance of examining both direct and indirect effects. Class placement had no direct effect on general self-concept. However, it had a total effect of -0.15, which was indirect, through social self-concept, student-teacher relationship, and parent expectations. Class placement affected each of these negatively such that increasingly inclusive placements resulted in more negative student ratings of relationships with both teacher and peers as well as parents' expectations of their child's academic attainment.

Social Self-Concept

For students with disabilities, general class placement is often deemed favourable because of its assumed social benefits (Stainback, Stainback, & Bunch, 1989; Winzer, 1999). However, previous studies have reported that the social self-concept of students with learning disabilities did not differ depending on their class placement (Elbaum, 2002; Wiener & Tardif, 2004). For students in the present sample, a one unit change in class placement (e.g. segregated school/class to periodic resource class to regular class) actually resulted in a decrease in social self-concept of -0.79.

This finding may be explained by drawing on social comparison theory. Festinger, who is credited with the original conception of the theory, states that, "to the extent that objective, non-social means are not available, people evaluate their opinions and abilities by comparison respectively with the opinions and abilities of others" (1954, p. 118). In an educational context, Marsh proposed and tested the big-fish-little-pond effect (BFLPE) to capture the frame of reference effects posited by Festinger (Marsh, 1987; Marsh et al., 1995; Marsh et al., 2001; Marsh et al., 2000). According to this theory, students will assess their social competencies by making comparisons to their classmates. If they are placed in more inclusive classes, where students may display greater social abilities, students with LD may rate their social self-concept as lower. However, if students are placed in segregated settings, with a more homogeneous peer group, they may rate themselves as more competent in comparison. Marsh's research has focused on the BFLPE as it applies to the academic self-concept of gifted students and has not explored it's relevance to social self-concept. However, the present findings suggest that a re-casting of Marsh's theory as the little-fish-big-pond effect may be relevant for students with LD who are placed in various classroom settings.

A second explanation for this finding is simply that students with learning disabilities, who are placed in general education classes, have poorer peer relationships than those in more segregated settings. Research exploring the preferences of students with learning disabilities has demonstrated that they believe that they have more opportunities to make friends in the mainstream or general education classroom than in pull-out or segregated settings (Klingner, Vaughn, Schumm, Cohen, & Forgan, 1998; Vaughn & Klingner, 1998). However, students with LD have been shown repeatedly to be more rejected and neglected by peers in general education classrooms (Nowicki, 2003). While these students feel the negative effects of social segregation, then, they may still see themselves as more socially successful when grouped with students who have similar academic and social difficulties.

Student-Teacher Relationships

The negative relationship between more inclusive class placement and teacher-student relationships has not been reported previously. However, studies investigating interactions between teachers and students with LD in general education classes may shed light on this finding. Boardman (2004) discovered that fourth grade teachers interacted more frequently with students with LD, followed by those who were low-achieving and finally, average-achieving. However, discourse analyses revealed that the quality of most interactions, in terms of their ability to increase learning, was low. Teachers typically focused exchanges with students on procedural and behavioural aspects of learning, such as reminders to stay on task and repetition of instructions. Similarly, Jordan and Stanovich (Jordan, Lindsay, & Stanovich, 1997; Jordan & Stanovich, 2001) found that, while some teachers had greater numbers of interactions with exceptional or at-risk students, the quality of the interaction varied depending on teachers' rating on the Pathognomonic-Interventionist Scale (PATH/INT) described previously. Specifically, teachers with interventionist beliefs interacted with students with exceptionalities at higher levels of cognitive engagement than teachers with pathognomonic beliefs.

Thus for students with learning disabilities who are placed in general education classes, communication with their teacher may consist of largely behavioural reminders, as compared to their non-disabled peers, who benefit from discussion related to academic material. Students with LD may perceive their relationship with their teacher somewhat more negatively as a result. Students who are served in pull-out or self-contained classes may have the benefit of smaller classes with teachers who are more focused on the specific needs of students who may perceive more equitable treatment as a result. Differential treatment on the part of teachers may also not be as apparent in a more homogeneous setting. This finding should not be overemphasized, however, as the effect of class placement on student-teacher relationship was quite small, with a one unit change in the former resulting in a 0.15 decrease in students' ratings of their relationship with their teacher.

Parent Expectations

The negative effect of class placement on parents' expectations of their child's educational attainment was also very small, with an unstandardized direct effect of -0.14.

However, this finding is interesting as we may expect that parents whose son or daughter is placed in regular, more "normal" placements would have higher aspirations for their child (Ritter, Michel, & Irby, 1999). However, some parents have expressed uncertainty as to whether their child will have enough individualized attention to improve academically in a regular classroom (Leyser & Kirk, 2004; Palmer, Fuller, Arora, & Nelson, 2001). Parents' beliefs regarding the educational appropriateness of their child's class placement will certainly influence whether or not they expect their child to complete high levels of education. Thus some parents of students with LD in the present sample may not feel that their child's academic needs are being met in the general classroom and they may express lower expectations of their child's attainment as a result. As with the previous finding, the negative influence of class placement on parent expectations needs be further substantiated before strong conclusions can be drawn.

Differences between LD and NLD Samples

Student-Teacher Relationship

For NLD students, having a positive relationship with their teacher improved their general self-concept. However, this was not the case for students with LD. For NLD students, the effect of student-teacher relationship was largely direct. This variable also had a moderate impact on academic self-concept, which in turn had a large effect on general self-concept. For students with LD, there was no direct effect found, and student-teacher relationship had a small positive effect on academic self-concept.

Having a positive relationship with a teacher has been shown to have an important influence on the self-concept of students with and without learning disabilities (Birch & Ladd, 1997; Jordan & Stanovich, 2001; Reddy, Rhodes, & Mulhall, 2003). However, there has been some indication in the literature that, for students with LD, support from peers has a greater impact on general self-concept than support from teachers or parents (Forman, 1988; Grebenkemper, 1993). Perhaps the repeated classroom failure that students with learning disabilities have experienced resulted in these students placing less value on their relationship with their teacher. Teacher feedback is one of the primary influences on students' estimation of the academic abilities (Bear et al., 1998). Students may avoid or ignore what is more likely to be negative feedback regarding academics in an effort to protect their self-concept. Instead, they may draw on friendships and social status to maintain their general self-concept. This hypothesis is supported by effects within the model (Figure 5), where the influence of social self-concept on general self-concept was greater than that of academic self-concept.

Social Skills

The reliance on social self-concept for students with LD suggested in the preceding section may be somewhat problematic, as social skills difficulties have been reported for many students with this disability (Kavale & Forness, 1996). In the present model, students with LD who had higher social skills also had higher general self-concept. However, student perception of their peer relationships was only impacted on slightly by teacher-rated social skills, and the effect was negative. It is generally assumed that greater social skills will result in better peer relationships (Vaughn et al., 2001). Indeed, this is the case for students in the NLD sample. However, students with LD who are quiet, well-behaved, cooperative and helpful may not enjoy higher social status and peer attention in the classroom. In fact, the reverse may be true, where those who are more talkative and somewhat disruptive may gain approval from their peers. Social skills did have a moderate positive impact on academic self-concept, which in turn influenced general self-concept. Thus, social skills interventions for students with LD may be valuable in that they improve classroom behaviours that allow students to be more successful academically, and feel better about themselves as a result. Interventions may not, however, improve peer relationships for students with LD. In attempting to fully understand the relationship between social skills on self-concept, it is essential to look further back in the model at the influence of gender.

Gender

Gender had a small, negative direct effect on general self-concept for both samples, indicating that boys had higher ratings. However, for students with LD, the positive indirect effects, through social skills, social self-concept, and parent expectations, were much larger, resulting in a total positive effect. An examination of the model reveals that the indirect effect of gender is also differentially mediated by academic self-concept, as its effect is positive for students with LD and negative for those without. Thus, for students with LD, girls have slightly higher academic self-concept and, for students without LD, boys have higher ratings.

Gender is a variable which is often overlooked in examining students with LD. This is likely due to the finding that boys are overrepresented in the LD population, by as much as 4:1 (Hallahan et al., 2005). However, girls with LD have been found in the present study to have higher social and academic self-concept, much better social skills, and their parents have higher academic expectations of them. Girls without LD also have higher self-concept and better social skills but they have slightly lower academic self-concept than boys.

As was previously mentioned, students with LD are often reported to have difficulties with social skills. However, the present results suggest that this may not be the case for girls. Girls with LD may be quieter, presenting few behaviour problems for their teachers and, generally, may be viewed as more successful in social and academic areas, by themselves, their teachers, and their parents. Certainly, research supports the higher incidence of behaviour problems among boys with LD than girls with LD (e.g., La Greca & Stone, 1990). That the direct effect of gender on general self-concept is negative for both samples suggests there are factors other than those included in the present model influencing how girls with and without LD feel about themselves. It is also important to note that students in the present samples are aged ten to fourteen. There is some evidence that gender differences in general self-concept are most strongly differentiated when students are aged fifteen to nineteen (Kling et al., 1999). Thus, the effect on self-concept exerted by the presence of a learning disability may still be predominant while students are in the pre-teen years but may be overtaken by the influence of gender when students enter adolescence. Future longitudinal research will be necessary to further untangle the influence of LD and gender on self-concept.

Socio-Economic Status

SES had a small effect on both groups of students. However, this effect is negative for students with learning disabilities and positive for those without. Students with LD from higher SES backgrounds had slightly lower academic and general self-concept and had higher parent expectations and teacher-rated social skills. In contrast, students without LD from higher SES backgrounds had much higher parent expectations and social skills, thus affecting general self-concept indirectly. The positive impact of

SES on general self-concept is supported by findings of Muijs (1997), who reported that both academic self-concept and family SES were significant predictors. However, the negative relationship between SES and self-concept for students with LD has not been reported previously. One possible explanation for this finding may have its roots in social comparison theory. Students whose parents, and potentially non-disabled siblings as well, are high-achieving, particularly in terms of educational completion, may feel more acutely the disparity between their achievement or abilities and those of their family. They may also experience pressure from their parents, as SES has a positive moderate impact on parent expectations. These factors combined may result in students with LD perceiving themselves as less able academically and, also, may negatively affect their general self-concept.

Educational Implications

Class Placement

Class placement had a negative impact on general self-concept indirectly, primarily though social self-concept. Clearly, as elucidated in Kavale and Forness (2000), "simple contact with students with disabilities itself does not result in more favorable attitudes and improved acceptance" (p. 286). Thus, simply placing students with LD in a regular classroom will not automatically result in perceptions of greater peer acceptance. Social skills training, which is often suggested for students with LD, may also not improve social self-concept as these constructs were found to be weakly linked in the present study. Instead, students with LD may benefit from increased opportunities for meaningful engagement with their classmates in both academic areas as well as non-academic domains, where learning difficulties may be less apparent. Examples include participation in structured collaborative or group work, where the role of students is clearly defined in order to allow equal success for students with LD, and differentiated instruction and assessment that allows students to display their abilities without having "special" accommodations that may serve to ostracize them in the classroom.

Teachers are also responsible for setting the tone in the class and students without disabilities are certainly influenced by the apparent beliefs and practices of their teachers regarding students with LD. Thus, the authentic social inclusion of students with LD in the classroom requires that teachers examine the ways in which they interact with these students and the expectations they have, of both their own ability to facilitate learning and the child's ability to learn. Experiences in classes where inclusion has been successfully implemented at the pre-service level may help prospective teachers develop more interventionist beliefs. Once in the field, in-service programs can help equip teachers with skills in using inclusive methods such as co-teaching and differentiated instruction. With opportunities for positive interaction with classmates and the true support of teachers, students with LD will enjoy greater social acceptance, student-teacher relationships, and ultimately, general self-concept in the general education classroom.

Differences between LD and NLD Samples

Although discussion has focused on the differences between the LD and NLD samples, it is important to note that the influences on general self-concept were largely similar. Thus interventions that improve the general self-concept of students without LD should also improve the general self-concept of students with LD. Efforts to improve social skills as well as social and academic self-concept are equally valid for both groups. Areas where educational implications may differ are in respect to student-teacher relationships, SES, and gender. While students' relationship with their teacher will clearly have an impact on many facets of their school success, students with LD appear to gain more self esteem from their relationships with their friends. In contrast, while social self-concept is the most important influence on general self-concept for students without LD, student-teacher relationship is also a major contributor. Thus, efforts to improve the general self-concept of students with LD may be more effective if they focus on improving peer, rather than teacher, relationships in the classroom.

Intervention efforts in schools are often focused on mitigating the effects of background variables such as low socio-economic status. However, in the case of students with LD, a different approach may be necessary. Those with high-achieving parents may be at a disadvantage because of the students' perception of the disparity between the academic competence of themselves and their parents. Students with LD may benefit from an increased awareness, on the part of their parents, of the need to bolster self-concept in areas unaffected by the LD, such as athletics or arts. While it appears to be detrimental to students with LD to lower academic expectations, parents may also help to improve their child's self-concept by appreciating their child's efforts in their work, as opposed to solely focusing on grades and test scores. Educators can also assist in this process by using methods such as portfolio or performance assessments that display the depth of students' learning, and by reporting to parents on all aspects of the students' development other than that which is purely academic.

Finally, in regards to gender, efforts to improve general self-concept may be better focused on boys with LD than girls. Although this finding is clearly preliminary in nature, it runs contrary to the belief held by many educators that girls suffer from lower self-concept than boys. In the "pre-teen" years, the general self-concept of boys with LD may be improved by interventions focused on improving social skills and peer acceptance and increasing academic expectations on the part of parents.

Summary

In order for students with learning disabilities to benefit from high self-concept in general class placements, their inclusion must be structured and purposeful. The facilitation of positive peer and teacher relationships will greatly assist in the success of this process. The general self-concept of students with and without LD will be improved by interventions which target social skills, promote peer acceptance, and increase perceptions of academic competence. Parents of students with LD from high SES backgrounds may help increase their child's self-concept by valuing their strengths and aspects of school performance other than strictly academic achievement. Similarly, teachers can provide parents with information regarding student progress that reflects a broad perspective of achievement. Finally, boys with LD may have lower self-concept than girls with LD during pre-teen years and may require gender-specific interventions, including social skill development, and increased academic expectations on the part of parents.

Limitations

The use of the NLSCY provided the opportunity to test models of general self-concept with national samples of Canadian students with and without learning disabilities. However, there are a number of important limitations that should be considered when interpreting the results of the analyses.

As was discussed in the Introduction, the identification of learning disabilities is still a matter of much debate. This is particularly the case in Canada where provincial Ministries of Education develop their own criteria for LD diagnosis. The selection of the sample of students with learning disabilities was based on a two-part question addressed to the students' classroom teacher. Students must have been both (a) receiving special/resource help, and (b) requiring special/resource help because of a learning disability. Thus, the students identified by teachers, while presumably meeting local standards for LD diagnosis, likely do not have identical learning profiles.

The choice of indicators used to measure each latent variable in the models was clearly restricted by the availability of items in the NLSCY. The survey is extremely comprehensive and contains hundreds of items for student, teacher, and parent respondents. However, valid and reliable indicators were not available for all variables. General and social self-concept were assessed using scales that have sound psychometric properties. Academic self-concept was measured by a single question and was general to student performance across all areas of schoolwork. As students begin to differentiate their academic self-concept in the later elementary years, multiple, subject-specific questions would have been preferable.

Social skills were measured on a scale that was completed by the teacher. While items had good face validity and the scale had excellent internal consistency, its construct validity is questionable. Finally, student-teacher relationship was perhaps the most difficult variable to measure. A single item, asking students to indicate how fairly they felt they were treated by their teacher, was chosen as an indicator of this variable. Certainly other measures that captured a more multidimensional view of student-teacher relationships may have altered results in the present study.

The majority of the items were chosen from Cycle 3 of the NLSCY. SES and gender were taken from Cycle 2. One of the original goals of this study was to examine influences on general self-concept longitudinally, which, presumably, the NLSCY should allow for. However, issues such as changes in questionnaire items across cycles, low response rates by teachers, and the eventual elimination of the teacher questionnaire, restricted the present analyses to largely cross-sectional data. Thus, while variables are presented as influencing each other in a temporal manner, they are clearly occurring simultaneously.

Finally, there are only 106 students identified as receiving services for LD in the survey for whom complete data was available. This is a small sample, particularly relative to the NLD group (*N* = 1477), and while acceptable (Fan, Thompson, & Wang, 1999; Hayduk, 1987), may be considered by some to be low for SEM analyses.

Directions for Future Research

The testing of the current model of general self-concept has been mainly exploratory in nature. Thus, there may be other school-related variables that may impact general self-concept and may be included in future models. There are, also, certainly indicators that may better capture variables in the model, such as student-teacher relationship and academic self-concept. Re-testing of the model using alternate measurements of variables would certainly assist in validating or refuting effects within the model.

In terms of specific findings, gender emerged as an unexpected influence, particularly for students with learning disabilities. Future research would benefit from an examination of the interplay between gender and behaviour, which in the present study was measured as social skills. The present model indicates that students who demonstrate better teacher-rated social behaviours (i.e., girls) have higher general self-concept. However, there are certainly boys within the LD sample who have high teacher-rated behaviours as well. It is not clear if it is truly an effect of gender or simply the case that students with more desirable classroom behaviour have higher self-concept. More in-depth studies are required to tease out the impact of these variables.

The sample of students with LD was compared to a sample of students who had not been identified as having any disabilities. However, it would be informative, in the future, to test the model on students who are at varying levels of achievement. A number of studies, for example, have shown that students with LD have many similarities, in terms of social and academic functioning, with students who are low-achieving (Haager & Vaughn, 1995; Vaughn, Zaragoza, Hogan, & Walker, 1993).

This study represents the first attempt to examine the influence of class placement within a model of general self-concept for students with learning disabilities. Class placement was defined broadly and may certainly be re-conceptualized in subsequent studies. However, the present study demonstrates how structural equation modeling allows researchers to explore the impact, which may be largely indirect, of class placement on various outcomes. It is hoped that future research in the field will take advantage of methods such as SEM to identify influential variables that may be targeted in an effort to improve the school experiences of students with disabilities.

Conclusion

The general self-concept of students is impacted on by a myriad of factors. A selection of school-related variables, which previous research had demonstrated to affect self-concept, was chosen for inclusion in two structural equation models, one for students with learning disabilities and one for students without disabilities. Test results indicated that the models fit data obtained from a nationally representative sample of 10-14 year old students extremely well. These models provide valuable information to educators and policy-makers regarding the creation of programs targeted at improving self-concept. For students with learning disabilities, the inclusion of class placement as one influential variable offered a unique contribution to the ongoing debate regarding the optimal approach to meeting their academic and social needs. Hopefully this study will be the first step toward a more multidimensional examination of the experiences of students with disabilities in Canadian classrooms.

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